

| | |
|---|-----|
| atg gta gtt aaa gtt ggt att aac ggt ttc ggt cgt atc gga cgt ctt | 48 |
| Met Val Val Lys Val Gly Ile Asn Gly Phe Gly Arg Ile Gly Arg Leu | |
| 1 5 10 15 | |
| gca ttc cgt cgt att caa aat gtt gaa ggt gtt gaa gta act cgt atc | 96 |
| Ala Phe Arg Arg Ile Gln Asn Val Glu Gly Val Glu Val Thr Arg Ile | |
| 20 25 30 | |
| aac gac ctt aca gat cca aac atg ctt gca cac ttg ttg aaa tac gat | 144 |
| Asn Asp Leu Thr Asp Pro Asn Met Leu Ala His Leu Leu Lys Tyr Asp | |
| 35 40 45 | |
| aca act caa gga cgt ttt gac gga act gtt gaa gtt aaa gaa ggt gga | 192 |
| Thr Thr Gln Gly Arg Phe Asp Gly Thr Val Glu Val Lys Glu Gly Gly | |
| 50 55 60 | |
| ttt gaa gta aac gga aac ttc atc aaa gtt tct gct gaa cgt gat cca | 240 |
| Phe Glu Val Asn Gly Asn Phe Ile Lys Val Ser Ala Glu Arg Asp Pro | |
| 65 70 75 80 | |
| gaa aac atc gac tgg gca act gac ggt gtt gaa atc gtt ctg gaa gca | 288 |
| Glu Asn Ile Asp Trp Ala Thr Asp Gly Val Glu Ile Val Leu Glu Ala | |
| 85 90 95 | |
| act ggt ttc ttt gct aaa aaa gaa gct gct gaa aaa cac tta cat gct | 336 |
| Thr Gly Phe Phe Ala Lys Lys Glu Ala Ala Glu Lys His Leu His Ala | |
| 100 105 110 | |
| aac ggt gct aaa aaa gtt gtt atc aca gct cct ggt gga aac gac gtt | 384 |
| Asn Gly Ala Lys Lys Val Val Ile Thr Ala Pro Gly Gly Asn Asp Val | |
| 115 120 125 | |
| aaa aca gtt gtt ttc aac act aac cac gac att ctt gac ggt act gaa | 432 |
| Lys Thr Val Val Phe Asn Thr Asn His Asp Ile Leu Asp Gly Thr Glu | |
| 130 135 140 | |
| aca gtt atc tca ggt gct tca tgt act aca aac tgt tta gct cct atg | 480 |
| Thr Val Ile Ser Gly Ala Ser Cys Thr Thr Asn Cys Leu Ala Pro Met | |
| 145 150 155 160 | |
| gct aaa gct ctt cac gat gca ttt ggt atc caa aaa ggt ctt atg act | 528 |
| Ala Lys Ala Leu His Asp Ala Phe Gly Ile Gln Lys Gly Leu Met Thr | |
| 165 170 175 | |
| aca atc cac gct tat act ggt gac caa atg atc ctt gac gga cca cac | 576 |
| Thr Ile His Ala Tyr Thr Gly Asp Gln Met Ile Leu Asp Gly Pro His | |
| 180 185 190 | |
| cgt ggt ggt gac ctt cgt cgt gct cgt gct ggt gct gca aac att gtt | 624 |
| Arg Gly Gly Asp Leu Arg Arg Ala Arg Ala Gly Ala Ala Asn Ile Val | |
| 195 200 205 | |

FIG. 1A

| | |
|---|------|
| cct aac tca act ggt gct gct aaa gct atc ggt ctt gtt atc cca gaa | 672 |
| Pro Asn Ser Thr Gly Ala Ala Lys Ala Ile Gly Leu Val Ile Pro Glu | |
| 210 215 220 | |
| ttg aat ggt aaa ctt gat ggt gct gca caa cgt gtt cct gtt cca act | 720 |
| Leu Asn Gly Lys Leu Asp Gly Ala Ala Gln Arg Val Pro Val Pro Thr | |
| 225 230 235 240 | |
| gga tca gta act gag ttg gtt gta act ctt gat aaa aac gtt tct gtt | 768 |
| Gly Ser Val Thr Glu Leu Val Val Thr Leu Asp Lys Asn Val Ser Val | |
| 245 250 255 | |
| gac gaa atc aac gct gct atg aaa gct gct tca aac gac agt ttc ggt | 816 |
| Asp Glu Ile Asn Ala Ala Met Lys Ala Ala Ser Asn Asp Ser Phe Gly | |
| 260 265 270 | |
| tac act gaa gat cca att gtt tct tca gat atc gta ggc gtg tca tac | 864 |
| Tyr Thr Glu Asp Pro Ile Val Ser Ser Asp Ile Val Gly Val Ser Tyr | |
| 275 280 285 | |
| ggt tca ttg ttt gac gca act caa act aaa gtt atg gaa gtt gac gga | 912 |
| Gly Ser Leu Phe Asp Ala Thr Gln Thr Lys Val Met Glu Val Asp Gly | |
| 290 295 300 | |
| tca caa ttg gtt aaa gtt gta tca tgg tat gac aat gaa atg tct tac | 960 |
| Ser Gln Leu Val Lys Val Val Ser Trp Tyr Asp Asn Glu Met Ser Tyr | |
| 305 310 315 320 | |
| act gct caa ctt gtt cgt aca ctt gag tac ttt gca aaa atc gct aaa | 1008 |
| Thr Ala Gln Leu Val Arg Thr Leu Glu Tyr Phe Ala Lys Ile Ala Lys | |
| 325 330 335 | |
| taa | 1011 |

FIG. 1B

| |
|---|
| atg gta gtt aaa gtt ggt att aac ggt ttc ggt cgt atc ggt cgt ctt Met Val Val Lys Val Gly Ile Asn Gly Phe Gly Arg Ile Gly Arg Leu 1 5 10 15 48 |
| gca ttc cgt cgc atc caa aac gta gaa ggt gtt gaa gtt act cgt atc Ala Phe Arg Arg Ile Gln Asn Val Glu Gly Val Glu Val Thr Arg Ile 20 25 30 96 |
| aac gac ctt aca gat cca aac atg ctt gca cac ttg ttg aaa tat gac Asn Asp Leu Thr Asp Pro Asn Met Leu Ala His Leu Leu Lys Tyr Asp 35 40 45 144 |
| aca act caa ggt cgt ttc gac ggt act gtt gaa gtt aaa gaa ggt gga Thr Thr Gln Gly Arg Phe Asp Gly Thr Val Glu Val Lys Glu Gly Gly 50 55 60 192 |
| ttc gaa gtt aac ggt caa ttt gtt aaa gtt tct gct gaa cgc gaa cca Phe Glu Val Asn Gly Gln Phe Val Lys Val Ser Ala Glu Arg Glu Pro 65 70 75 80 240 |
| gca aac att gac tgg gct act gat ggc gta gaa atc gtt ctt gaa gca Ala Asn Ile Asp Trp Ala Thr Asp Gly Val Glu Ile Val Leu Glu Ala 85 90 95 288 |
| act ggt ttc ttt gca tca aaa gaa aaa gct gga caa cac atc cat gaa Thr Gly Phe Phe Ala Ser Lys Glu Lys Ala Gly Gln His Ile His Glu 100 105 110 336 |
| aat ggt gct aaa aaa gtt gtt atc aca gct cct ggt gga aac gac gtt Asn Gly Ala Lys Lys Val Val Ile Thr Ala Pro Gly Gly Asn Asp Val 115 120 125 384 |
| aaa aca gtt gtt ttc aac act aac cac gat atc ctt gat gga act gaa Lys Thr Val Val Phe Asn Thr Asn His Asp Ile Leu Asp Gly Thr Glu 130 135 140 432 |
| aca gtt atc tca ggt gct tca tgt act aca aac tgt ctt gct cca atg Thr Val Ile Ser Gly Ala Ser Cys Thr Thr Asn Cys Leu Ala Pro Met 145 150 155 160 480 |
| gct aaa gct tta caa gac aac ttt ggt gtt aaa caa ggt ttg atg act Ala Lys Ala Leu Gln Asp Asn Phe Gly Val Lys Gln Gly Leu Met Thr 165 170 175 528 |
| act atc cac gca tac act ggt gac caa atg atc ctt gac gga cca cac Thr Ile His Ala Tyr Thr Gly Asp Gln Met Ile Leu Asp Gly Pro His 180 185 190 576 |
| cgt ggt ggt gac ctt cgt cgt gct cgt gca ggt gct gca aac atc gtt Arg Gly Gly Asp Leu Arg Arg Ala Arg Ala Gly Ala Ala Asn Ile Val 195 200 205 624 |

FIG. 2A

| | |
|---|------|
| cct aac tca act ggt gct gca aaa gct atc gga ctt gtt atc cca gaa | 672 |
| Pro Asn Ser Thr Gly Ala Ala Lys Ala Ile Gly Leu Val Ile Pro Glu | |
| 210 215 220 | |
| ttg aac ggt aaa ctt gat ggt gct gca caa cgt gtt cct gtt cca act | 720 |
| Leu Asn Gly Lys Leu Asp Gly Ala Ala Gln Arg Val Pro Val Pro Thr | |
| 225 230 235 240 | |
| gga tca gta act gaa ttg gtt gca act ctt gaa aaa gac gta act gtc | 768 |
| Gly Ser Val Thr Glu Leu Val Ala Thr Leu Glu Lys Asp Val Thr Val | |
| 245 250 255 | |
| gaa gaa gta aat gca gct atg aaa gca gca gct aac gat tca tac ggt | 816 |
| Glu Glu Val Asn Ala Ala Met Lys Ala Ala Ala Asn Asp Ser Tyr Gly | |
| 260 265 270 | |
| tat act gaa gat cca atc gta tca tct gat atc gtt ggt att tca tac | 864 |
| Tyr Thr Glu Asp Pro Ile Val Ser Ser Asp Ile Val Gly Ile Ser Tyr | |
| 275 280 285 | |
| ggt tca ttg ttt gat gct act caa act aaa gtt caa act gtt gac ggt | 912 |
| Gly Ser Leu Phe Asp Ala Thr Gln Thr Lys Val Gln Thr Val Asp Gly | |
| 290 295 300 | |
| aac caa ttg gtt aaa gtt gtt tca tgg tac gat aac gaa atg tca tac | 960 |
| Asn Gln Leu Val Lys Val Val Ser Trp Tyr Asp Asn Glu Met Ser Tyr | |
| 305 310 315 320 | |
| act tca caa ctt gtt cgt aca ctt gag tac ttt gca aaa atc gct aaa | 1008 |
| Thr Ser Gln Leu Val Arg Thr Leu Glu Tyr Phe Ala Lys Ile Ala Lys | |
| 325 330 335 | |
| taa | 1011 |

FIG. 2B

| | |
|---|-----|
| atg gta gtt aaa gtt ggt att aac ggt ttc ggt cgt atc gga cgt ctt | 48 |
| Met Val Val Lys Val Gly Ile Asn Gly Phe Gly Arg Ile Gly Arg Leu | |
| 1 5 10 15 | |
| gca ttc cgt cgt att caa aac gtt gaa ggt gtt gaa gta act cgt att | 96 |
| Ala Phe Arg Arg Ile Gln Asn Val Glu Gly Val Glu Val Thr Arg Ile | |
| 20 25 30 | |
| aac gat ctt act gac cca aat atg ctt gca cac ttg ttg aaa tat gat | 144 |
| Asn Asp Leu Thr Asp Pro Asn Met Leu Ala His Leu Leu Lys Tyr Asp | |
| 35 40 45 | |
| aca act caa ggt cgt ttc gac ggt aca gtt gaa gtt aaa gat ggt gga | 192 |
| Thr Thr Gln Gly Arg Phe Asp Gly Thr Val Glu Val Lys Asp Gly Gly | |
| 50 55 60 | |
| ttc gaa gtt aac gga aac ttc atc aaa gtt tct gct gaa aaa gat cca | 240 |
| Phe Glu Val Asn Gly Asn Phe Ile Lys Val Ser Ala Glu Lys Asp Pro | |
| 65 70 75 80 | |
| gaa aac att gac tgg gca act gac ggt gta gaa atc gtt ctt gaa gca | 288 |
| Glu Asn Ile Asp Trp Ala Thr Asp Gly Val Glu Ile Val Leu Glu Ala | |
| 85 90 95 | |
| act ggt ttc ttt gct aaa aaa gca gct gct gaa aaa cat tta cat gct | 336 |
| Thr Gly Phe Phe Ala Lys Lys Ala Ala Ala Glu Lys His Leu His Ala | |
| 100 105 110 | |
| aac ggt gct aaa aaa gtt gtt atc aca gct cct ggt gga gat gat gtt | 384 |
| Asn Gly Ala Lys Lys Val Val Ile Thr Ala Pro Gly Gly Asp Asp Val | |
| 115 120 125 | |
| aaa act gtt gta ttt aac aca aac cat gac att ctt gac ggt aca gaa | 432 |
| Lys Thr Val Val Phe Asn Thr Asn His Asp Ile Leu Asp Gly Thr Glu | |
| 130 135 140 | |
| act gta att tca ggt gct tca tgt act act aac tgt tta gct cca atg | 480 |
| Thr Val Ile Ser Gly Ala Ser Cys Thr Thr Asn Cys Leu Ala Pro Met | |
| 145 150 155 160 | |
| gct aaa gct ttg caa gat aac ttt ggt gtt aaa caa ggt ttg atg aca | 528 |
| Ala Lys Ala Leu Gln Asp Asn Phe Gly Val Lys Gln Gly Leu Met Thr | |
| 165 170 175 | |
| act atc cac gct tac act ggt gac caa atg atc ctt gac gga cca cac | 576 |
| Thr Ile His Ala Tyr Thr Gly Asp Gln Met Ile Leu Asp Gly Pro His | |
| 180 185 190 | |
| cgt ggt ggt gac ctt cgt cgt gct cgt gct ggt gca agc aac att gtt | 624 |
| Arg Gly Gly Asp Leu Arg Arg Ala Arg Ala Gly Ala Ser Asn Ile Val | |
| 195 200 205 | |

FIG. 3A

| | |
|---|------|
| cct aac tca act ggt gct gct aaa gca atc ggt ctt gta atc cca gaa | 672 |
| Pro Asn Ser Thr Gly Ala Ala Lys Ala Ile Gly Leu Val Ile Pro Glu | |
| 210 215 220 | |
| tta aat ggt aaa ctt gac ggt gct gca caa cgt gtt cct gtt cca act | 720 |
| Leu Asn Gly Lys Leu Asp Gly Ala Ala Gln Arg Val Pro Val Pro Thr | |
| 225 230 235 240 | |
| gga tca gta act gaa tta gta gca gtt ctt gaa aaa gaa act tca gtt | 768 |
| Gly Ser Val Thr Glu Leu Val Ala Val Leu Glu Lys Glu Thr Ser Val | |
| 245 250 255 | |
| gaa gaa atc aac gca gca atg aaa gca gct gca aac gat tca tac gga | 816 |
| Glu Glu Ile Asn Ala Ala Met Lys Ala Ala Asn Asp Ser Tyr Gly | |
| 260 265 270 | |
| tac act gaa gac cca atc gta tct tct gat atc atc ggt atg gct tac | 864 |
| Tyr Thr Glu Asp Pro Ile Val Ser Ser Asp Ile Ile Gly Met Ala Tyr | |
| 275 280 285 | |
| ggt tca ttg ttt gat gct act caa act aaa gta caa act gtt gat gga | 912 |
| Gly Ser Leu Phe Asp Ala Thr Gln Thr Lys Val Gln Thr Val Asp Gly | |
| 290 295 300 | |
| aat caa tta gtt aaa gtt gtt tca tgg tat gac aac gaa atg tct tac | 960 |
| Asn Gln Leu Val Lys Val Val Ser Trp Tyr Asp Asn Glu Met Ser Tyr | |
| 305 310 315 320 | |
| act gca caa ctt gtt cgt act ctt gag tac ttt gca aaa atc gct aaa | 1008 |
| Thr Ala Gln Leu Val Arg Thr Leu Glu Tyr Phe Ala Lys Ile Ala Lys | |
| 325 330 335 | |
| taa | 1011 |

FIG. 3B

| | |
|---|-----|
| atg gta gtt aaa gtt ggt att aac ggt ttt ggc cgt atc gga cgt ctt | 48 |
| Met Val Val Lys Val Gly Ile Asn Gly Phe Gly Arg Ile Gly Arg Leu | |
| 1 5 10 15 | |
| gct ttc cgt cgt att caa aat gta gaa ggt gtt gaa gtt act cgc atc | 96 |
| Ala Phe Arg Arg Ile Gln Asn Val Glu Gly Val Glu Val Thr Arg Ile | |
| 20 25 30 | |
| aac gac ctt aca gat cca aat atg ctt gca cac ttg tta aaa tac gat | 144 |
| Asn Asp Leu Thr Asp Pro Asn Met Leu Ala His Leu Leu Lys Tyr Asp | |
| 35 40 45 | |
| aca act caa ggt cgt ttt gac ggt act gta gaa gtt aaa gat ggt gga | 192 |
| Thr Thr Gln Gly Arg Phe Asp Gly Thr Val Glu Val Lys Asp Gly Gly | |
| 50 55 60 | |
| ttt gac gtt aac gga aaa ttc att aaa gtt tct gct gaa aaa gat cca | 240 |
| Phe Asp Val Asn Gly Lys Phe Ile Lys Val Ser Ala Glu Lys Asp Pro | |
| 65 70 75 80 | |
| gaa caa att gac tgg gca act gac ggt gtt gaa atc gtt ctt gaa gca | 288 |
| Glu Gln Ile Asp Trp Ala Thr Asp Gly Val Glu Ile Val Leu Glu Ala | |
| 85 90 95 | |
| act ggt ttc ttt gct aaa aaa gca gct gct gaa aaa cat tta cat gaa | 336 |
| Thr Gly Phe Phe Ala Lys Lys Ala Ala Ala Glu Lys His Leu His Glu | |
| 100 105 110 | |
| aat ggt gct aaa aaa gtt gtt atc act gct cct ggt gga gat gac gtg | 384 |
| Asn Gly Ala Lys Lys Val Val Ile Thr Ala Pro Gly Gly Asp Asp Val | |
| 115 120 125 | |
| aaa aca gtt gta ttt aac act aac cat gat atc ctt gat gga act gaa | 432 |
| Lys Thr Val Val Phe Asn Thr Asn His Asp Ile Leu Asp Gly Thr Glu | |
| 130 135 140 | |
| aca gtt att tca ggt gct tca tgt act aca aac tgt tta gct cca atg | 480 |
| Thr Val Ile Ser Gly Ala Ser Cys Thr Thr Asn Cys Leu Ala Pro Met | |
| 145 150 155 160 | |
| gct aaa gct tta caa gat aac ttt ggc gta aaa caa ggt tta atg act | 528 |
| Ala Lys Ala Leu Gln Asp Asn Phe Gly Val Lys Gln Gly Leu Met Thr | |
| 165 170 175 | |
| aca atc cac gct tac act ggt gat caa atg ctt ctt gat gga cct cac | 576 |
| Thr Ile His Ala Tyr Thr Gly Asp Gln Met Leu Leu Asp Gly Pro His | |
| 180 185 190 | |
| cgt ggt ggt gac tta cgt cgt gcc cgt gct ggt gct aac aat att gtt | 624 |
| Arg Gly Gly Asp Leu Arg Arg Ala Arg Ala Gly Ala Asn Asn Ile Val | |
| 195 200 205 | |

FIG. 4A

| | |
|---|------|
| cct aac tca act ggt gct gct aaa gca atc ggt ctt gtt atc cct gaa | 672 |
| Pro Asn Ser Thr Gly Ala Ala Lys Ala Ile Gly Leu Val Ile Pro Glu | |
| 210 215 220 | |
| tta aat ggt aaa ctt gac ggt gct gca caa cgt gta cca gtt cca aca | 720 |
| Leu Asn Gly Lys Leu Asp Gly Ala Ala Gln Arg Val Pro Val Pro Thr | |
| 225 230 235 240 | |
| ggt tca gta aca gaa tta gta gca gtt ctt aat aaa gaa act tca gta | 768 |
| Gly Ser Val Thr Glu Leu Val Ala Val Leu Asn Lys Glu Thr Ser Val | |
| 245 250 255 | |
| gaa gaa att aac tca gta atg aaa gct gca gct aat gat tca tat ggt | 816 |
| Glu Glu Ile Asn Ser Val Met Lys Ala Ala Asn Asp Ser Tyr Gly | |
| 260 265 270 | |
| tac act gaa gat cca atc gta tca tct gat atc gtt ggt atg tct ttc | 864 |
| Tyr Thr Glu Asp Pro Ile Val Ser Ser Asp Ile Val Gly Met Ser Phe | |
| 275 280 285 | |
| ggt tca tta ttc gat gct act caa act aaa gta caa act gtt gat gga | 912 |
| Gly Ser Leu Phe Asp Ala Thr Gln Thr Lys Val Gln Thr Val Asp Gly | |
| 290 295 300 | |
| aat caa tta gtt aaa gtt gtt tca tgg tat gac aat gaa atg tct tac | 960 |
| Asn Gln Leu Val Lys Val Val Ser Trp Tyr Asp Asn Glu Met Ser Tyr | |
| 305 310 315 320 | |
| act gct caa ctt gat cgt aca ctt gag tac ttt gca aaa atc gct aaa | 1008 |
| Thr Ala Gln Leu Asp Arg Thr Leu Glu Tyr Phe Ala Lys Ile Ala Lys | |
| 325 330 335 | |
| taa | 1011 |

FIG. 4B

| | |
|---|-----|
| atg gta gtt aaa gtt ggt att aac ggt ttc gga cgt atc ggt cgt ctt | 48 |
| Met Val Val Lys Val Gly Ile Asn Gly Phe Gly Arg Ile Gly Arg Leu | |
| 1 5 10 15 | |
| gca ttc cgt cgt att caa aat gtt gaa ggt gtt gaa gta act cgt atc | 96 |
| Ala Phe Arg Arg Ile Gln Asn Val Glu Gly Val Glu Val Thr Arg Ile | |
| 20 25 30 | |
| aat gac ctt aca gat cct aac atg ctt gca cac ttg ttg aaa tat gat | 144 |
| Asn Asp Leu Thr Asp Pro Asn Met Leu Ala His Leu Leu Lys Tyr Asp | |
| 35 40 45 | |
| aca act caa ggt cgt ttt gac ggt aca gtt gaa gtt aaa gat ggt gga | 192 |
| Thr Thr Gln Gly Arg Phe Asp Gly Thr Val Glu Val Lys Asp Gly Gly | |
| 50 55 60 | |
| ttc gaa gtt aac gga agc ttt gtt aaa gtt tct gca gaa cgc gaa cca | 240 |
| Phe Glu Val Asn Gly Ser Phe Val Lys Val Ser Ala Glu Arg Glu Pro | |
| 65 70 75 80 | |
| gca aac att gac tgg gct act gat ggt gta gac atc gtt ctt gaa gca | 288 |
| Ala Asn Ile Asp Trp Ala Thr Asp Gly Val Asp Ile Val Leu Glu Ala | |
| 85 90 95 | |
| aca ggt ttc ttc gct tct aaa gca gct gct gaa caa cac att cac gct | 336 |
| Thr Gly Phe Phe Ala Ser Lys Ala Ala Ala Glu Gln His Ile His Ala | |
| 100 105 110 | |
| aac ggt gcg aaa aaa gtt gtt atc aca gct cct ggt gga aat gac gtt | 384 |
| Asn Gly Ala Lys Lys Val Val Ile Thr Ala Pro Gly Gly Asn Asp Val | |
| 115 120 125 | |
| aaa aca gtt gtt tac aac act aac cat gat att ctt gat gga act gaa | 432 |
| Lys Thr Val Val Tyr Asn Thr Asn His Asp Ile Leu Asp Gly Thr Glu | |
| 130 135 140 | |
| aca gtt atc tca ggt gct tca tgt act aca aac tgt tta gct cca atg | 480 |
| Thr Val Ile Ser Gly Ala Ser Cys Thr Thr Asn Cys Leu Ala Pro Met | |
| 145 150 155 160 | |
| gct aaa gca tta caa gat aac ttt ggt gta aaa caa ggt tta atg act | 528 |
| Ala Lys Ala Leu Gln Asp Asn Phe Gly Val Lys Gln Gly Leu Met Thr | |
| 165 170 175 | |
| act atc cat ggt tac act ggt gac caa atg gtt ctt gac gga cca cac | 576 |
| Thr Ile His Gly Tyr Thr Gly Asp Gln Met Val Leu Asp Gly Pro His | |
| 180 185 190 | |
| cgt ggt ggt gat ctt cgt cgt gct cgt gca gct gca gca aac atc gtt | 624 |
| Arg Gly Gly Asp Leu Arg Arg Ala Arg Ala Ala Ala Ala Asn Ile Val | |
| 195 200 205 | |

FIG. 5A

| | |
|---|------|
| cct aac tca act ggt gct gct aaa gca atc ggt ctt gtt atc cca gaa | 672 |
| Pro Asn Ser Thr Gly Ala Ala Lys Ala Ile Gly Leu Val Ile Pro Glu | |
| 210 215 220 | |
| tta aat ggt aaa ctt gac ggt gct gca caa cgt gtt cct gtt cca act | 720 |
| Leu Asn Gly Lys Leu Asp Gly Ala Ala Gln Arg Val Pro Val Pro Thr | |
| 225 230 235 240 | |
| gga tca gta act gaa tta gta gca gtt ctt gaa aaa gat act tca gta | 768 |
| Gly Ser Val Thr Glu Leu Val Ala Val Leu Glu Lys Asp Thr Ser Val | |
| 245 250 255 | |
| gaa gaa atc aat gca gct atg aaa gca gca gct aac gat tca tac ggt | 816 |
| Glu Glu Ile Asn Ala Ala Met Lys Ala Ala Ala Asn Asp Ser Tyr Gly | |
| 260 265 270 | |
| tac act gaa gat gct atc gta tca tca gat atc gta ggt att tct tac | 864 |
| Tyr Thr Glu Asp Ala Ile Val Ser Ser Asp Ile Val Gly Ile Ser Tyr | |
| 275 280 285 | |
| ggt tca tta ttt gat gct act caa act aaa gta caa act gtt gat gga | 912 |
| Gly Ser Leu Phe Asp Ala Thr Gln Thr Lys Val Gln Thr Val Asp Gly | |
| 290 295 300 | |
| aat caa ttg gtt aaa gtt gtt tca tgg tat gac aat gaa atg tct tac | 960 |
| Asn Gln Leu Val Lys Val Val Ser Trp Tyr Asp Asn Glu Met Ser Tyr | |
| 305 310 315 320 | |
| act gct caa ctt gtt cgt act ctt gag tac ttt gca aaa atc gct aaa | 1008 |
| Thr Ala Gln Leu Val Arg Thr Leu Glu Tyr Phe Ala Lys Ile Ala Lys | |
| 325 330 335 | |
| taa | 1011 |

FIG. 5B

| | | | | | | | | | | | | | | | | |
|-------------------|-------------------|-------------------|-------------------|-------------------|------------------|-------------------|-------------------|------------------|-------------------|-------------------|------------------|-------------------|-------------------|-------------------|-------------------|-----|
| atg Met 1 | aaa Lys | aaa Lys | ata Ile | aca Thr 5 | ggg Gly | att Ile | att Ile | tta Leu 10 | ttg Leu | ctt Leu | ctt Leu | gca Ala | gtc Val | att Ile 15 | att Ile | 48 |
| ctg Leu | tct Ser | gca Ala | tgc Cys 20 | cag Gln | gca Ala | aac Asn | tac Tyr | gga Gly 25 | tcc Ser | ggg Gly | atg Met | gta Val | gtt Val 30 | aaa Lys | gtt Val | 96 |
| ggg Gly | att Ile | aac Asn 35 | ggg Gly | ttc Phe | ggg Gly | cgt Arg | atc Ile 40 | gga Gly | cgt Arg | ctt Leu | gca Ala | ttc Phe 45 | cgt Arg | cgt Arg | att Ile | 144 |
| caa Gln 50 | aat Asn | gtt Val | gaa Glu | ggg Gly | gtt Val | gaa Glu 55 | gta Val | act Thr | cgt Arg | atc Ile | aac Asn 60 | gac Asp | ctt Leu | aca Thr | gat Asp | 192 |
| cca Pro 65 | aac Asn | atg Met | ctt Leu | gca Ala | cac His 70 | ttg Leu | ttg Leu | aaa Lys | tac Tyr 75 | gat Asp | aca Thr | act Thr | caa Gln | gga Gly | cgt Arg 80 | 240 |
| ttt Phe | gac Asp | gga Gly | act Thr | gtt Val 85 | gaa Glu | gtt Val | aaa Lys | gaa Glu 90 | ggg Gly | gga Gly | ttt Phe | gaa Glu | gta Val | aac Asn 95 | gga Gly | 288 |
| aac Asn | ttc Phe | atc Ile | aaa Lys 100 | gtt Val | tct Ser | gct Ala | gaa Glu 105 | cgt Arg | gat Asp | cca Pro | gaa Glu | aac Asn | atc Ile 110 | gac Asp | tgg Trp | 336 |
| gca Ala | act Thr | gac Asp 115 | ggg Gly | gtt Val | gaa Glu | atc Ile | gtt Val 120 | ctg Leu | gaa Glu | gca Ala | ctc Leu | gag Glu 125 | ggg Gly | act Thr | gta Val | 384 |
| gaa Glu 130 | gtt Val | aaa Lys | gat Asp | ggg Gly | gga Gly | ttt Phe 135 | gac Asp | gtt Val | aac Asn | gga Gly | aaa Lys | ttc Phe | att Ile | aaa Lys | gtt Val | 432 |
| tct Ser 145 | gct Ala | gaa Glu | aaa Lys | gat Asp | cca Pro | gaa Glu 150 | caa Gln | att Ile | gac Asp | tgg Trp 155 | gca Ala | act Thr | gac Asp | ggg Gly | gtt Val 160 | 480 |
| gaa Glu | atc Ile | gtt Val | ctt Leu | gaa Glu 165 | atc Ile | gat Asp | ggg Gly | act Thr | gtt Val 170 | gaa Glu | gtt Val | aaa Lys | gaa Glu | ggg Gly 175 | gga Gly | 528 |
| ttc Phe | gaa Glu | gtt Val | aac Asn 180 | ggg Gly | caa Gln | ttt Phe | gtt Val 185 | aaa Lys | gtt Val | tct Ser | gct Ala | gaa Glu | cgc Arg 190 | gaa Glu | cca Pro | 576 |
| gca Ala | aac Asn 195 | att Ile | gac Asp | tgg Trp | gct Ala | act Thr | gat Asp 200 | ggg Gly | gta Val | gaa Glu | atc Ile | gtt Val 205 | ctt Leu | gaa Glu | gca Ala | 624 |

FIG. 6A

| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| act | agt | ttc | ttt | gct | aaa | aaa | gaa | gct | gct | gaa | aaa | cac | tta | cat | gct | 672 |
| Thr | Ser | Phe | Phe | Ala | Lys | Lys | Glu | Ala | Ala | Glu | Lys | His | Leu | His | Ala | |
| | 210 | | | | | 215 | | | | | 220 | | | | | |
| aac | ggt | gct | aaa | aaa | ggt | ggt | atc | aca | gct | cct | ggt | gga | aac | gac | ggt | 720 |
| Asn | Gly | Ala | Lys | Lys | Val | Val | Ile | Thr | Ala | Pro | Gly | Gly | Asn | Asp | Val | |
| 225 | | | | | 230 | | | | | 235 | | | | | 240 | |
| aaa | aca | ggt | ggt | ttc | aac | act | aac | cac | gac | att | ctt | gac | ggt | act | gaa | 768 |
| Lys | Thr | Val | Val | Phe | Asn | Thr | Asn | His | Asp | Ile | Leu | Asp | Gly | Thr | Glu | |
| | | | | 245 | | | | | 250 | | | | | 255 | | |
| aca | ggt | atc | tca | ggt | gct | tca | tgt | act | aca | aac | tgt | tta | gct | cct | atg | 816 |
| Thr | Val | Ile | Ser | Gly | Ala | Ser | Cys | Thr | Thr | Asn | Cys | Leu | Ala | Pro | Met | |
| | | | 260 | | | | | 265 | | | | | 270 | | | |
| gct | aaa | gct | ctt | cac | gat | gca | ttt | ggt | atc | caa | aaa | ggt | ctt | atg | act | 864 |
| Ala | Lys | Ala | Leu | His | Asp | Ala | Phe | Gly | Ile | Gln | Lys | Gly | Leu | Met | Thr | |
| | | 275 | | | | | 280 | | | | | 285 | | | | |
| aca | atc | cac | gct | tat | act | ggt | gac | caa | atg | atc | ctt | gac | gga | cca | cac | 912 |
| Thr | Ile | His | Ala | Tyr | Thr | Gly | Asp | Gln | Met | Ile | Leu | Asp | Gly | Pro | His | |
| | 290 | | | | | 295 | | | | | 300 | | | | | |
| cgt | ggt | ggt | gac | ctt | cgt | cgt | gct | cgt | gct | ggt | gct | gca | aac | att | ggt | 960 |
| Arg | Gly | Gly | Asp | Leu | Arg | Arg | Ala | Arg | Ala | Gly | Ala | Ala | Asn | Ile | Val | |
| 305 | | | | | 310 | | | | | 315 | | | | | 320 | |
| cct | aac | tca | act | ggt | gct | gct | aaa | gct | atc | ggt | ctt | ggt | atc | cca | gaa | 1008 |
| Pro | Asn | Ser | Thr | Gly | Ala | Ala | Lys | Ala | Ile | Gly | Leu | Val | Ile | Pro | Glu | |
| | | | | 325 | | | | | 330 | | | | | 335 | | |
| ttg | aat | ggt | aaa | ctt | gat | ggt | gct | gca | caa | cgt | ggt | cct | ggt | cca | act | 1056 |
| Leu | Asn | Gly | Lys | Leu | Asp | Gly | Ala | Ala | Gln | Arg | Val | Pro | Val | Pro | Thr | |
| | | | 340 | | | | 345 | | | | | 350 | | | | |
| gga | tca | gta | act | gag | ttg | ggt | gta | act | ctt | gat | aaa | aac | ggt | tct | ggt | 1104 |
| Gly | Ser | Val | Thr | Glu | Leu | Val | Val | Thr | Leu | Asp | Lys | Asn | Val | Ser | Val | |
| | | 355 | | | | | 360 | | | | | 365 | | | | |
| gac | gaa | atc | aac | gct | gct | atg | aaa | gct | gct | tca | aac | gac | agt | ttc | ggt | 1152 |
| Asp | Glu | Ile | Asn | Ala | Ala | Met | Lys | Ala | Ala | Ser | Asn | Asp | Ser | Phe | Gly | |
| | 370 | | | | | 375 | | | | | 380 | | | | | |
| tac | act | gaa | gat | cca | att | ggt | tct | tca | gat | atc | gta | ggc | gtg | tca | tac | 1200 |
| Tyr | Thr | Glu | Asp | Pro | Ile | Val | Ser | Ser | Asp | Ile | Val | Gly | Val | Ser | Tyr | |
| 385 | | | | | 390 | | | | | 395 | | | | | 400 | |
| ggt | tca | ttg | ttt | gac | gca | act | caa | act | aaa | ggt | atg | gaa | ggt | gac | gga | 1248 |
| Gly | Ser | Leu | Phe | Asp | Ala | Thr | Gln | Thr | Lys | Val | Met | Glu | Val | Asp | Gly | |
| | | | | 405 | | | | | 410 | | | | | 415 | | |

FIG. 6B

| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| tca | caa | ttg | gtt | aaa | gtt | gta | tca | tgg | tat | gac | aat | gaa | atg | tct | tac | 1296 |
| Ser | Gln | Leu | Val | Lys | Val | Val | Ser | Trp | Tyr | Asp | Asn | Glu | Met | Ser | Tyr | |
| | | | 420 | | | | | 425 | | | | | 430 | | | |
| | | | | | | | | | | | | | | | | |
| act | gct | caa | ctt | gtt | cgt | aca | ctt | gag | tat | ttt | gca | aaa | atc | gct | aaa | 1344 |
| Thr | Ala | Gln | Leu | Val | Arg | Thr | Leu | Glu | Tyr | Phe | Ala | Lys | Ile | Ala | Lys | |
| | | | 435 | | | | | 440 | | | | | 445 | | | |
| | | | | | | | | | | | | | | | | |
| taa | | | | | | | | | | | | | | | | 1347 |

FIG. 6C

| | | | | | | |
|-------------|------------|------------|------------|------------|------------|-----|
| | 1 | | | | | 50 |
| DysGapC | ATGGTAGTTA | AAGTTGGTAT | TAACGGTTTC | GGTCGTATCG | GACGTCTTGC | |
| SpyGapC | ----- | ----- | ----- | ----- | ----- | |
| SeqGapC | ----- | ----- | ----- | ----- | ----- | |
| ParaUbGapC | ----- | ----- | -----t | --c----- | ----- | |
| UberGapC | ----- | ----- | ----- | ----- | ----- | |
| AgalGapCDNA | ----- | ----- | ----- | ----- | -t----- | |
| SiniGapC | ----- | ----- | ----- | --a----- | -t----- | |
| BovGapC | ----- | ----- | ----- | ---c---- | -g--c--g-t | |
| | 51 | | | | | 100 |
| DysGapC | ATTCCGTCGT | ATTCAAAATG | TTGAAGGTGT | TGAAGTAACT | CGTATCAACG | |
| SpyGapC | -----c--- | -----ca | -c----- | ----- | -----t- | |
| SeqGapC | ----- | ----- | ----- | ----- | ----- | |
| ParaUbGapC | t----- | ----- | -a----- | -----t-- | --c----- | |
| UberGapC | ----- | -----c- | ----- | ----- | -----t-- | |
| AgalGapCDNA | -----c | --c-----c- | -a----- | -----t-- | ----- | |
| SiniGapC | ----- | ----- | ----- | ----- | -----t- | |
| BovGapC | cac-a-ggc- | gc-ttt---t | c--gcaaa-- | g--ca-cgtc | gcc-----t- | |
| | 101 | | | | | 150 |
| DysGapC | ACC...TTAC | AGATCCAAAC | ATGCTTGCAC | ACTTGTTGAA | ATACGATACA | |
| SpyGapC | ---...---- | -----t | ----- | ----- | ---c----- | |
| SeqGapC | ---...---- | ----- | ----- | ----- | ---c----- | |
| ParaUbGapC | ---...---- | -----t | ----- | -----a-- | ---c----- | |
| UberGapC | -t-...---- | t--c-----t | ----- | ----- | ---t----- | |
| AgalGapCDNA | ---...---- | ----- | ----- | ----- | ---t--c--- | |
| SiniGapC | ---...---- | -----t-- | ----- | ----- | ---t----- | |
| BovGapC | ---cct-c-t | t--c-ttc-- | taca-g-tct | --a---cc- | g--t---t-c | |

FIG. 7A

| | | | | | |
|-------------|------------|------------|-------------|------------|------------|
| | 151 | | | | 200 |
| DysGapC | ACTCAAGGAC | GTTTTGACGG | AACTGTTGAA | GTAAAGAAG | GTGGATTGGA |
| SpyGapC | ----- | -----t-- | a--a----- | ----- | -----t-- |
| SeqGapC | -----a- | ----- | a--t----- | ----- | -----t-- |
| ParaUbGapC | ----- | ----- | ---t--a--- | -----t- | -----t-- |
| UberGapC | ----- | ---c----- | ---a----- | -----t- | -----c-- |
| AgalGapCDNA | ----- | ---c----- | ---t----- | ----- | -----c-- |
| SiniGapC | ----- | ----- | ---a----- | -----t- | -----c-- |
| BovGapC | --c--c--ca | ag--ca---- | c--a--ca-g | -cag-ga-c- | -gaagc-c-t |
| | 201 | | | | 250 |
| DysGapC | AGTAAACGGA | AACTTCATCA | AAGTTTCTGC | TGAACGTGAT | CCAGAAAACA |
| SpyGapC | ---a----- | ----- | ----- | -----t-- | ----- |
| SeqGapC | ---a----- | ----- | ----- | -----t-- | ----- |
| ParaUbGapC | c----- | --a-----t- | ----- | ---aaa--- | -----c-a- |
| UberGapC | ----- | ----- | ----- | ---aaa--- | ----- |
| AgalGapCDNA | -----t | c-a--tg-t- | ----- | -----c-a | ---c----- |
| SiniGapC | ----- | -g--tg-t- | ----- | a-----c-a | ---c----- |
| BovGapC | ca-c--t--- | --ggc----- | cca-c-tcca | g--g--a--- | --t-cc---- |
| | 251 | | | | 300 |
| DysGapC | TCGACTGGGC | AACTGACGGT | GTTGAAATCG | TTCTGGAAGC | AACTGGTTTC |
| SpyGapC | -c----- | -----t-g | ----- | ----- | ----- |
| SeqGapC | -c----- | -----c-- | ----- | ----- | ----- |
| ParaUbGapC | -t----- | -----c-- | ----- | ----- | ----- |
| UberGapC | -t----- | -----c-- | ---a----- | ----- | ----- |
| AgalGapCDNA | -t----- | t-----t-c | ---a----- | ----- | ----- |
| SiniGapC | -t----- | t-----t-- | ---a-c----- | ----- | ---a----- |
| BovGapC | -ca-g---g | tga--ct--- | -c---gtat- | -ag-g--gt- | c-----gg-- |
| | 301 | | | | 350 |
| DysGapC | TTTGCTAAAA | AAGAAGCTGC | TGAAAAACAC | TTACATGCTA | ACGGTGCTAA |
| SpyGapC | ----- | -----a-- | ----- | ----- | ----- |
| SeqGapC | ----- | ----- | -----c- | ----- | ----- |
| ParaUbGapC | ----- | ---c----- | -----t | -----aa- | -t----- |
| UberGapC | ----- | ---c----- | -----t | ----- | ----- |
| AgalGapCDNA | -----atc-- | -----aaa-- | --g-c----- | a-c---aa- | -t----- |
| SiniGapC | --c---tct- | ---c----- | ---c----- | a-t--c--- | -----g-- |
| BovGapC | --ca---cc- | tg--gaag-- | --gggct--- | --ga-g-g-- | ...-c--c-- |
| | 351 | | | | 400 |
| DysGapC | AAAAGTTGTT | ATCACAGCTC | CTGGTGGAAA | CGACGTTAAA | ACAGTTGTTT |
| SpyGapC | ----- | ----- | ----- | ---t----- | ----- |
| SeqGapC | ----- | ----- | ----- | ----- | ----- |
| ParaUbGapC | ----- | -----t--- | -----g- | t---g--- | -----a- |
| UberGapC | ----- | ----- | -----g- | t--t----- | --t-----a- |
| AgalGapCDNA | ----- | ----- | ----- | ----- | ----- |
| SiniGapC | ----- | ----- | ----- | t----- | ----- |
| BovGapC | g-gg--ca-c | ---t-t-a- | --tc--...c | ---t-cccc | -tgt---ga |

FIG. 7B

| | | | | | |
|-------------|------------|------------|------------|------------|-------------|
| | 401 | | | | 450 |
| DysGapC | TCAACACTAA | CCACGA.CAT | TCTTGACGGT | ACTGAAACAG | TTATCTCAGG |
| SpyGapC | ----- | ----- | ----- | ----- | ----- |
| SeqGapC | ----- | ----- | ----- | ----- | ----- |
| ParaUbGapC | -t----- | ---t-.t-- | c-----t--a | ----- | ---t----- |
| UberGapc | -t-----a-- | ---t--. | ----- | --a-----t- | -a--t----- |
| AgalGapCDNA | ----- | -----t-- | c-----t--a | ----- | ----- |
| SiniGapC | a----- | ---t-.t-- | -----t--a | ----- | ----- |
| BovGapC | -ggg-gtg-- | -----a-g | -.a-a--aac | --cctc-aga | --g--agcaa |
| | 451 | | | | 500 |
| DysGapC | TGCTTCATGT | ACTACAAACT | GTTTAGCTCC | TATGGCTAAA | GCTCTTCACG |
| SpyGapC | ----- | ----- | ----- | t----- | ---c-t--c- |
| SeqGapC | ----- | ----- | ----- | t----- | ---c-t--c- |
| ParaUbGapC | ----- | ----- | ----- | ----- | -----a---- |
| UberGapc | ----- | -----t---- | ----- | ----- | -----g---- |
| AgalGapCDNA | ----- | ----- | --c-t----- | ----- | -----a---- |
| SiniGapC | ----- | ----- | ----- | ----- | ---a-a----- |
| BovGapC | ---c--c--c | --c--c---- | -c-g--c-- | cc----c--g | -tca-c--t- |
| | 501 | | | | 550 |
| DysGapC | ATGCATTGG | TATCCAAAAA | GGTCTTATGA | CTACAATCCA | CGCTTATACT |
| SpyGapC | --gca--c-- | -a--c--a-- | ---c----- | ---a----- | ----- |
| SeqGapC | --gca----- | -a--c--a-- | ---c----- | ---a----- | ----- |
| ParaUbGapC | ----- | cg-a----- | ---t-a---- | ---a----- | ----- |
| UberGapc | ----- | -g----- | ---t-g---- | -a--t----- | ----- |
| AgalGapCDNA | -c----- | -g----- | ---t-g---- | ---t----- | ---a----- |
| SiniGapC | ----- | -g-a----- | ---t-a---- | ---t----- | t-g----- |
| BovGapC | -cc----- | ca-cgtgg-g | --ac----- | -c--tg---- | ---cat---- |
| | 551 | | | | 600 |
| DysGapC | GGTGACCAAA | TGATCCTTGA | CGGACCACAC | CGTGGTGGTG | ACCTTCGTCG |
| SpyGapC | ----- | ----- | ----- | ----- | ----- |
| SeqGapC | ----- | -----g---- | t---ac-gt | g----- | -t----- |
| ParaUbGapC | -----t---- | --c-t----- | t-----t-- | ----- | --t-a----- |
| UberGapc | ----- | ----- | ----- | ----- | ----- |
| AgalGapCDNA | ----- | ----- | ----- | ----- | ----- |
| SiniGapC | ----- | --g-t----- | ----- | ----- | -t----- |
| BovGapC | -ccac--g- | a--ctg-g-- | t--c--ctc- | ...--gaagc | tgtgg--ga |
| | 601 | | | | 650 |
| DysGapC | TGCTCGTGCT | GGTGCTGCAA | ACATTGTTCC | TAACTCAACT | GGTGCTGCTA |
| SpyGapC | ---a--c-- | ----- | ----- | ----- | ----- |
| SeqGapC | ----- | ----- | ----- | ----- | -----cg-- |
| ParaUbGapC | ---c----- | -----aac- | -t--t----- | ----- | ----- |
| UberGapc | ----- | -----aagc- | ---t----- | ----- | ----- |
| AgalGapCDNA | -----a | ----- | ----- | ----- | -----a- |
| SiniGapC | -----a | -c--a----- | ----- | ----- | ----- |
| BovGapC | c-gc--a-gg | -c--ccag- | -t--a-c-- | -gct--t-- | --c-----c- |

FIG. 7C

| | | | | | |
|-------------|------------|------------|-------------|-------------|-------------|
| | 651 | | | | 700 |
| DysGapC | AAGCTATCGG | TCTTGTTATC | CCAGAATTGA | ATGGTAAACT | TGATGGTGCT |
| SpyGapC | ----- | ----- | -----c-t- | -c----- | ----- |
| SeqGapC | ----- | ----- | -----g- | -c----- | ----- |
| ParaUbGapC | ----a----- | ----- | --t-----a- | -t----- | ----- |
| UberGapC | ----a----- | -----a-- | -----a- | -t----- | ----- |
| AgalGapCDNA | ----- | a----- | -----g- | -c----- | ---t----- |
| SiniGapC | ----a----- | ----- | -----a- | -t----- | ----- |
| BovGapC | -g--cg-g-- | caag--c-- | --t--gc-c- | -c--g--g-- | cact--catg |
| | 701 | | | | 750 |
| DysGapC | GCACAACGTG | TTCCTGTTCC | AACTGGATCA | GTAAGTGAAGT | TGGTTGTAAC |
| SpyGapC | ----- | ----- | ----- | -----g- | -----t--- |
| SeqGapC | ----- | ----- | ----- | -----g- | -----t--- |
| ParaUbGapC | ----- | -a-a----- | ---a-t--- | -----a--- | -a-a--gt |
| UberGapC | ----- | ----- | ----- | ----- | -a-a--gt |
| AgalGapCDNA | ----- | ----- | ----- | ----- | ----- |
| SiniGapC | ----- | ----- | ----- | ----- | -a-a--gt |
| BovGapC | --cttc--c- | -c--cac--- | c-ac-tg--t | --tgtg--tc | --acctgccg |
| | 751 | | | | 800 |
| DysGapC | TCTTGATAAA | AACGTTTCTG | TTGACGAAAT | CAACGCTGCT | ATGAAAGCTG |
| SpyGapC | -----c--- | a--t----- | ---c----- | ----t-t--- | ----- |
| SeqGapC | -----c--- | a--t----- | ---c----- | ----t-t--- | ----- |
| ParaUbGapC | ----a-t--- | --aac--a- | -a----- | t--t--ta | ----- |
| UberGapC | ----- | --aac--a- | ----- | -----a | -----a- |
| AgalGapCDNA | ----- | ---taa--- | -c-----g- | a--t----- | -----a- |
| SiniGapC | ----- | --tac--a- | -a----- | ---t----- | -----a- |
| BovGapC | c--g--g--- | cct-ccaagt | a--t--g-- | ---gaag-tg | g---gcag- |
| | 801 | | | | 850 |
| DysGapC | CTTCAAACGA | CAGTTTCGGT | TACACTGAAG | ATCCAATTGT | TTCTTCAGAT |
| SpyGapC | --t----- | -agc-t--- | ----- | ----- | t----- |
| SeqGapC | --t----- | -agc-t--- | ----- | ----- | t----- |
| ParaUbGapC | -ag-t--t-- | ----at--- | ----- | ----- | ---a--t--- |
| UberGapC | --g----- | -----a--a | ----- | -c----- | -----t--- |
| AgalGapCDNA | -ag-t----- | -----a--- | --t----- | ----- | ---a--t--- |
| SiniGapC | -ag-t----- | -----a--- | ----- | --g-t----- | ---a----- |
| BovGapC | -gt--g-g-g | cc-tct-aag | gg--t-ct-- | gctac-ct-a | ggaccag-t- |
| | 851 | | | | 900 |
| DysGapC | ATCGTAGGCG | TGTCATA... | CGGTTTCATTG | TTTGACGCAA | CTCAAACCTAA |
| SpyGapC | -----cg | -a----- | ----- | -----c-a- | ----- |
| SeqGapC | -----cg | -a----- | ----- | -----c-a- | ----- |
| ParaUbGapC | -----t--ta | ---t-t... | -----a | --c----- | ----- |
| UberGapC | ---a-c--ta | --g-t--- | ----- | ----- | ----- |
| AgalGapCDNA | -----t--ta | -t----- | ----- | ----- | ----- |
| SiniGapC | -----ta | -t--t--- | -----a | ----- | ----- |
| BovGapC | g--tcct-cg | ac-tca-cag | --a-a-tcac | -c-tc-a-ct | tcg-tg--gg |

FIG. 7D

| | | | | | |
|-------------|------------|------------|------------|------------|------------|
| | 901 | | | | 950 |
| DysGapC | AGTTATGGAA | GTTGACGGAT | CACAATTGGT | TAAAGTTGTA | TCATGGTATG |
| SpyGapC | ---aatggaa | -----c---t | ca----- | -----a | ----- |
| SeqGapC | ---tatggaa | -----t---t | ca----- | -----a | ----- |
| ParaUbGapC | ---a----- | -----t--- | -t-----a- | ----- | ----- |
| UberGapc | ---a----- | -----t--- | -t-----a- | ----- | ----- |
| AgalGapCDNA | ---t----- | -----c-t- | -c----- | ----- | -----c- |
| SiniGapC | ---a----- | -----t--- | -t----- | ----- | ----- |
| BovGapC | g-ctggc-t- | -ccctcaacg | -c--c--t-- | c--gc-ca-- | --c-----c- |

| | | | | | |
|-------------|------------|------------|------------|------------|------------|
| | 951 | | | | 1000 |
| DysGapC | ACAATGAAAT | GTCTTACACT | GCTCAACTTG | TTCGTACACT | TGAGTATTTT |
| SpyGapC | ----c----- | ----- | ----- | -a-----t-- | -----c |
| SeqGapC | ----c----- | ----- | ----- | ----- | ----- |
| ParaUbGapC | ----t----- | ----- | ----- | a----- | ----- |
| UberGapc | ----c----- | ----- | -a----- | -----t-- | ----- |
| AgalGapCDNA | -t--c----- | ---a----- | t-a----- | ----- | ----- |
| SiniGapC | ----t----- | ----- | ----- | -----t-- | ----- |
| BovGapC | ----t--t- | tggc---gc | aaa--gg-- | ----- | ----- |

| | | |
|-------------|------------|----------|
| | 1001 | 1018 |
| DysGapC | GCAAAAATCG | CTAAATAA |
| SpyGapC | -----t- | ----- |
| SeqGapC | ----- | ----- |
| ParaUbGapC | ----- | ----- |
| UberGapc | ----- | ----- |
| AgalGapCDNA | ----- | ----- |
| SiniGapC | ----- | ----- |
| BovGapC | ----- | ----- |

FIG. 7E

| | | | | | |
|-----------|------------|------------|------------|------------|------------|
| | 1 | | | | 50 |
| polyGap4 | MKKITGIILL | LLAVIILSAC | QANYGSGMVV | KVGINGFGRI | GRLAFRRION |
| SpyGapC | ----- | ----- | ----- | ----- | ----- |
| SeqGapC | ----- | ----- | ----- | ----- | ----- |
| DysGapC | ----- | ----- | ----- | ----- | ----- |
| PUberGapC | ----- | ----- | ----- | ----- | ----- |
| UberGapC | ----- | ----- | ----- | ----- | ----- |
| AgalGapC | ----- | ----- | ----- | ----- | ----- |
| IniaeGapC | ----- | ----- | ----- | ----- | ----- |
| BovGapC | ----- | ----- | ----- | ----- | ----- |
| | 51 | | | | 100 |
| polyGap4 | VEGVEVTRIN | DLTDPNMLAH | LLKYDTTQGR | FDGTVEVKEG | GFEVNGNFIK |
| DysGapC | ----- | ----- | ----- | ----- | ----- |
| SpyGapC | i----- | ----- | ----- | ----- | ----- |
| SeqGapC | ----- | ----- | ----- | ----- | ----- |
| PUberGapC | ----- | ----- | ----- | -----d- | --d--k-- |
| UberGapC | ----- | ----- | ----- | -----d- | ----- |
| AgalGapC | ----- | ----- | ----- | ----- | -----q-v- |
| IniaeGapC | ----- | ----- | ----- | -----d- | -----s-v- |
| BovGapC | ----- | ----- | ----- | ----- | ----- |

FIG. 8A

| | | | | | |
|-----------|------------|------------|------------|------------|------------|
| | 101 | | | | 150 |
| polyGap4 | VSAERDPENI | DWATDGVEIV | LEALEGTVEV | KDGGFDVNGK | FIKVSAEKDP |
| DysGapC | -----.. | ..... | ..... | ..... | ..... |
| SpyGapC | -----.. | ..... | ..... | ..... | ..... |
| SeqGapC | -----.. | ..... | ..... | ..... | ..... |
| PUberGapC | ----k---- | ..... | ..... | ..... | ..... |
| UberGapC | ----k---- | ..... | ..... | ..... | ..... |
| AgalGapC | -----e-a.. | ..... | ..... | ..... | ..... |
| IniaeGapC | -----e-a.. | ..... | ..... | ..... | ..... |
| BovGapC | ----- | ----- | --rigrl-tr | aafnsgkvdi | vaindpfi-l |
| | 151 | | | | 200 |
| polyGap4 | EQIDWATDGV | EIVLEIDGTV | EVKEGGFEVN | GQFVKVSAER | EPANIDWATD |
| DysGapC | ..... | ..... | ..... | ..... | ..... |
| SpyGapC | ..... | ..... | ..... | ..... | ..... |
| SeqGapC | ..... | ..... | ..... | ..... | ..... |
| PUberGapC | ..... | ..... | ..... | ..... | ..q----- |
| UberGapC | ..... | ..... | ..... | ..... | ..... |
| AgalGapC | ..... | ..... | ..... | ..... | ..... |
| IniaeGapC | ..... | ..... | ..... | ..... | ..... |
| BovGapC | hymvymfqyd | sthgkfn--- | kaen-klvi- | -kaitifq-- | d---k-gda |
| | 201 | | | | 250 |
| polyGap4 | GVEIVLEATS | FFAKKEAAEK | HLHANGAKKV | VITAPGGNDV | KTVVFNTNHD |
| DysGapC | ----- | ----- | ----- | ----- | ----- |
| SpyGapC | ----- | ----- | ----- | ----- | ----- |
| SeqGapC | ----- | ----- | p----- | ----- | -qlfstltts |
| PUberGapC | ----- | ----a---- | ---e----- | -----d-- | ----- |
| UberGapC | ----- | ----a---- | ----- | -----d-- | ----- |
| AgalGapC | ----- | ---s--k-gq | -i-e----- | ----- | ----- |
| IniaeGapC | --d----- | ---s-a---q | -i----- | ----- | ---y----- |
| BovGapC | -a-y-v-s-- | v-ttm-k-ga | --.kg---r- | i-s--sa.-a | pmf-mgv--e |
| | 251 | | | | 300 |
| polyGap4 | ILDGTETVIS | GASCTTNCLA | PMAKALHDAF | GIQKGLMTTI | HAYTGDQMIL |
| DysGapC | ----- | ----- | ----- | ----- | ----- |
| SpyGapC | ----- | ----- | ----- | ----- | ----- |
| SeqGapC | ----- | ----- | ----- | ----- | -----v |
| PUberGapC | ----- | ----- | -----q-n- | -vkq----- | -----l- |
| UberGapC | ----- | ----- | -----q-n- | -vkq----- | ----- |
| AgalGapC | ----- | ----- | -----q-n- | -vkq----- | ----- |
| IniaeGapC | ----- | ----- | -----q-n- | -vkq----- | -g-----v- |
| BovGapC | kynn-lkiv- | n----- | -l--vi--h- | --ve-----v | --i-at-ktv |

FIG. 8B

| | | | | | |
|-----------|------------|------------|------------|------------|------------|
| | 301 | | | | 350 |
| polyGap4 | DGPHRGDLR | RARAGAANIV | PNSTGAAKAI | GLVIPELNGK | LDGAAQRPV |
| DysGapC | ----- | ----- | ----- | ----- | ----- |
| SpyGapC | ----- | ----- | ----- | ----- | ----- |
| SeqGapC | --hrg---- | ----- | -----r-- | ----- | ----- |
| PUberGapC | ----- | -----n-- | ----- | ----- | ----- |
| UberGapC | ----- | -----s-- | ----- | ----- | ----- |
| AgalGapC | ----- | ----- | ----- | ----- | ----- |
| IniaeGapC | ----- | -----a-- | ----- | ----- | ----- |
| BovGapC | ---.s-klw- | dg-ga-q--i | -a-----v | -k----- | -t-m-f---t |

| | | | | | |
|-----------|------------|------------|------------|------------|-------------|
| | 351 | | | | 400 |
| polyGap4 | PTGSVTELVV | TLDKNVSVDE | INAAMKAASN | DS....FGYT | EDPIVSSDIV |
| DysGapC | ----- | ----- | ----- | ----- | ----- |
| SpyGapC | ----- | ----- | --s----- | ----- | ----- |
| SeqGapC | ----- | ----- | ----- | ----- | ----- |
| PUberGapC | -----a | v-n-et--e- | --sv---a- | -----y-- | ----- |
| UberGapC | -----a | v-e-et--e- | -----a- | -----y-- | -----i |
| AgalGapC | -----a | --e-d-t-e- | v-----a- | -----y-- | ----- |
| IniaeGapC | -----a | v-e-dt--e- | -----a- | -----y-- | -----a----- |
| BovGapC | -nv--vd-tc | r-e-paky-- | -kkvv-q--e | gplkgil--- | --qv--c-fn |

| | | | | | |
|-----------|------------|------------|-------------|------------|------------|
| | 401 | | | | 450 |
| polyGap4 | GVSYGSLFDA | TQTKVMEVDG | SQLVKVVSWSY | DNEMSYTAQL | VRTLEYFAKI |
| DysGapC | ----- | ----- | ----- | ----- | ----- |
| SpyGapC | ----- | ----- | ----- | ----- | ----- |
| SeqGapC | ----- | ----- | ----- | ----- | ----- |
| PUberGapC | -m-f----- | -----qt-- | n----- | ----- | d----- |
| UberGapC | -ma----- | -----qt-- | n----- | ----- | ----- |
| AgalGapC | -i----- | -----qt-- | n----- | -----s-- | ----- |
| IniaeGapC | -i----- | -----qt-- | n----- | ----- | ----- |
| BovGapC | sdths-t--- | gagial...n | dhf--li--- | ---fg-sk-- | ----- |

| | |
|-----------|-----|
| | 451 |
| polyGap4 | AK |
| DysGapC | -- |
| SpyGapC | -- |
| SeqGapC | -- |
| PUberGapC | -- |
| UberGapC | -- |
| AgalGapC | -- |
| IniaeGapC | -- |
| BovGapC | -- |

FIG. 8C

Peptide Structure Results

Peptide Structure of: DysGapC

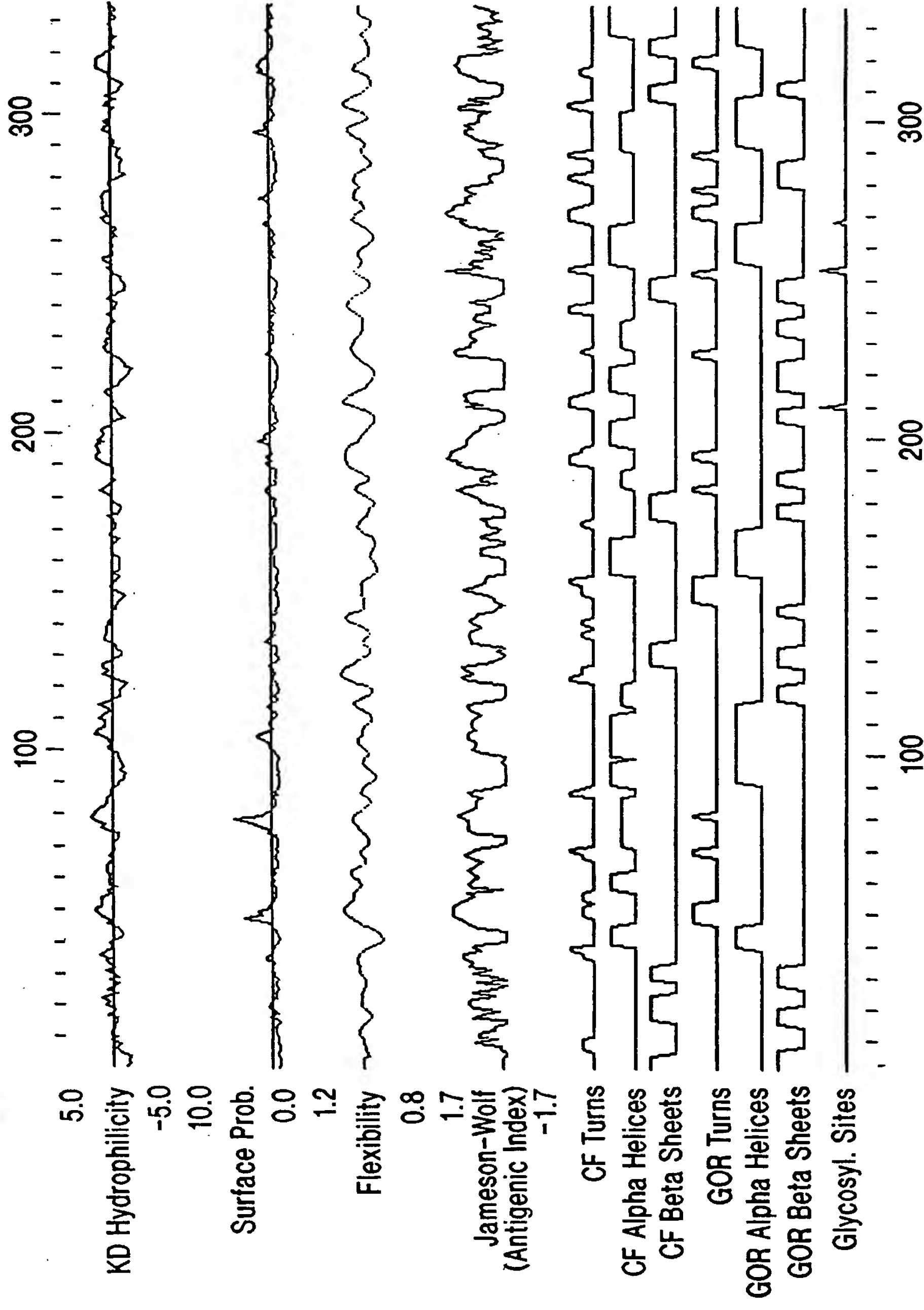


FIG. 9

Peptide Structure Results

Peptide Structure of: AgalGapC

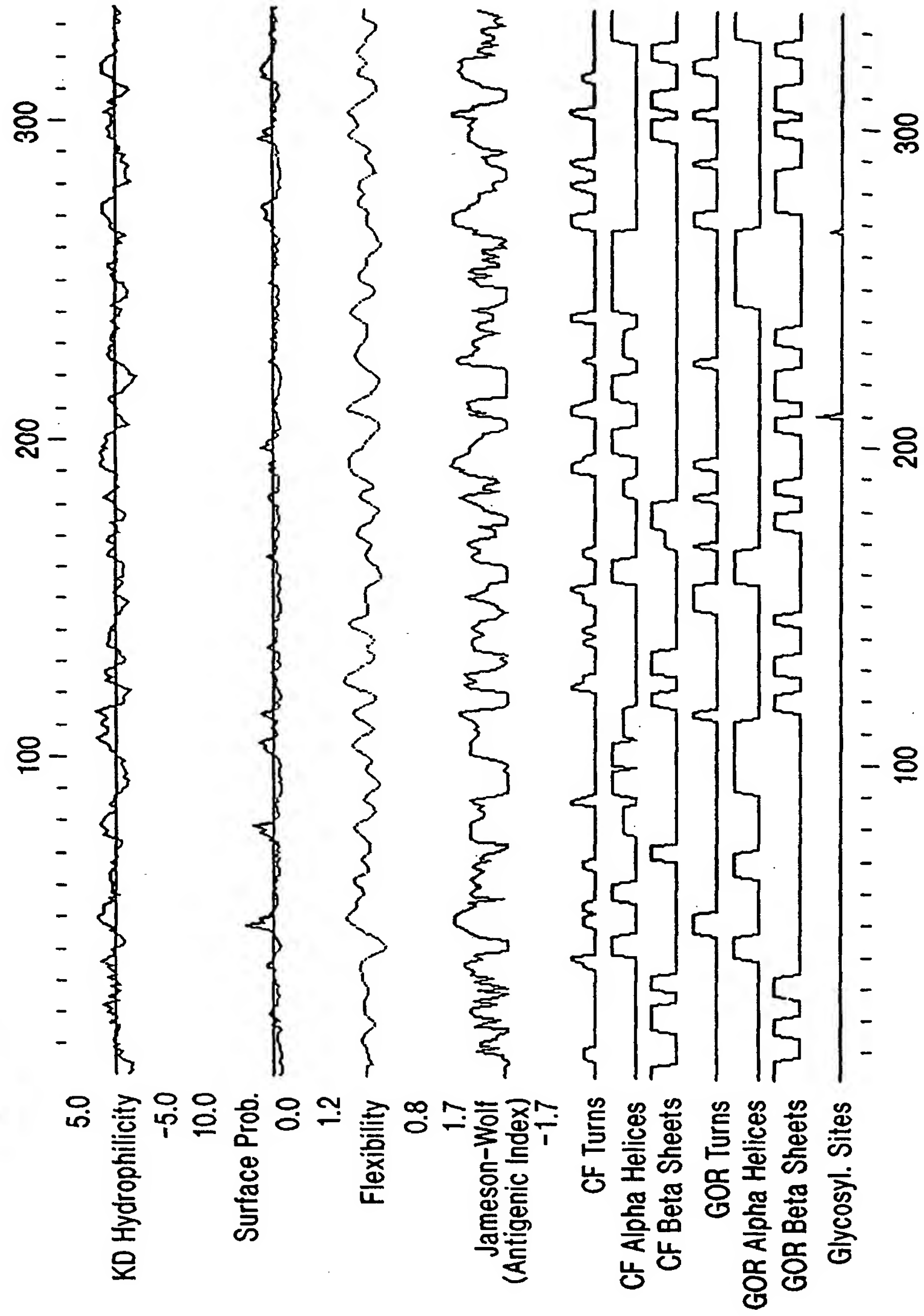


FIG. 10

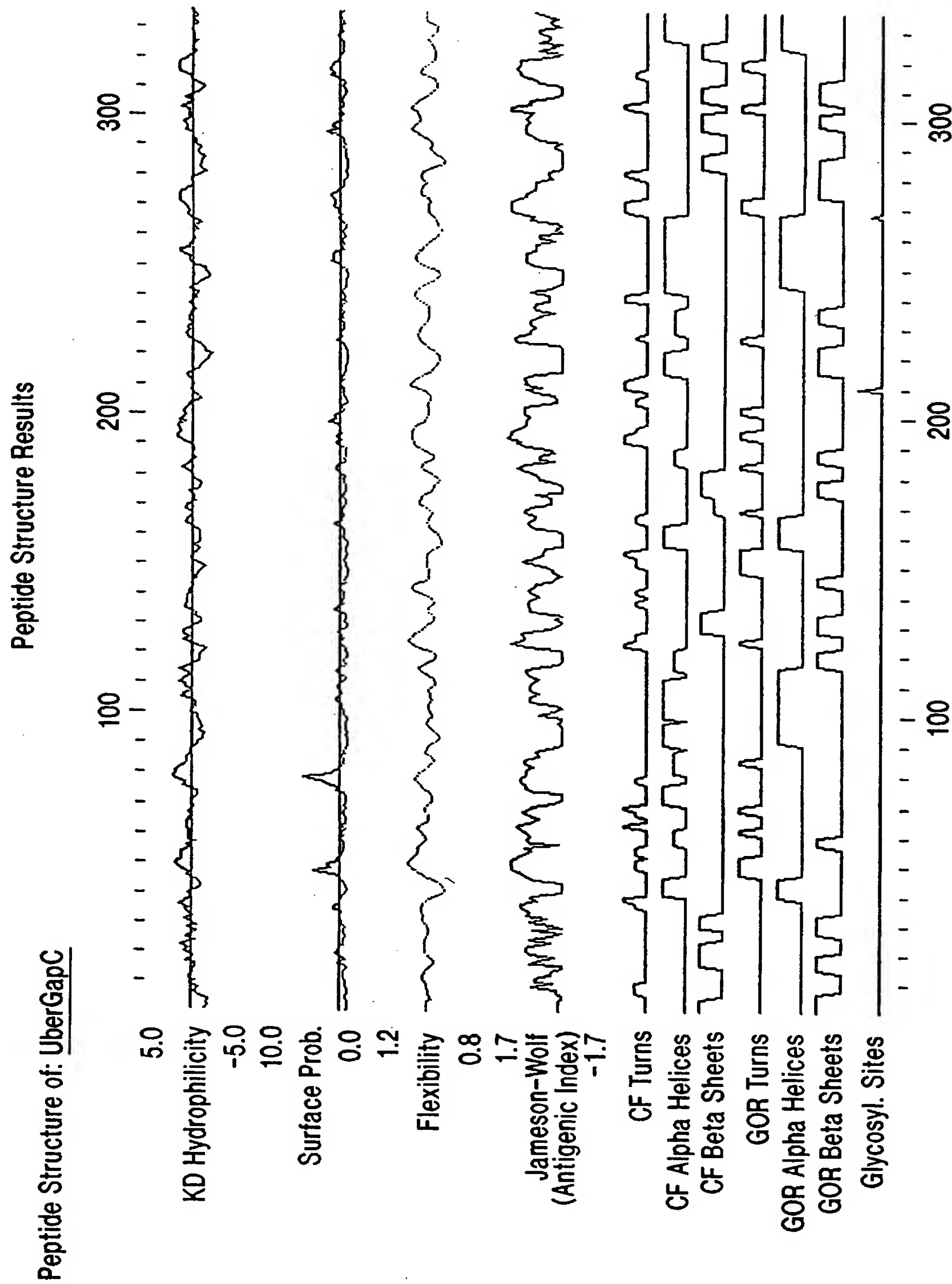


FIG. 11

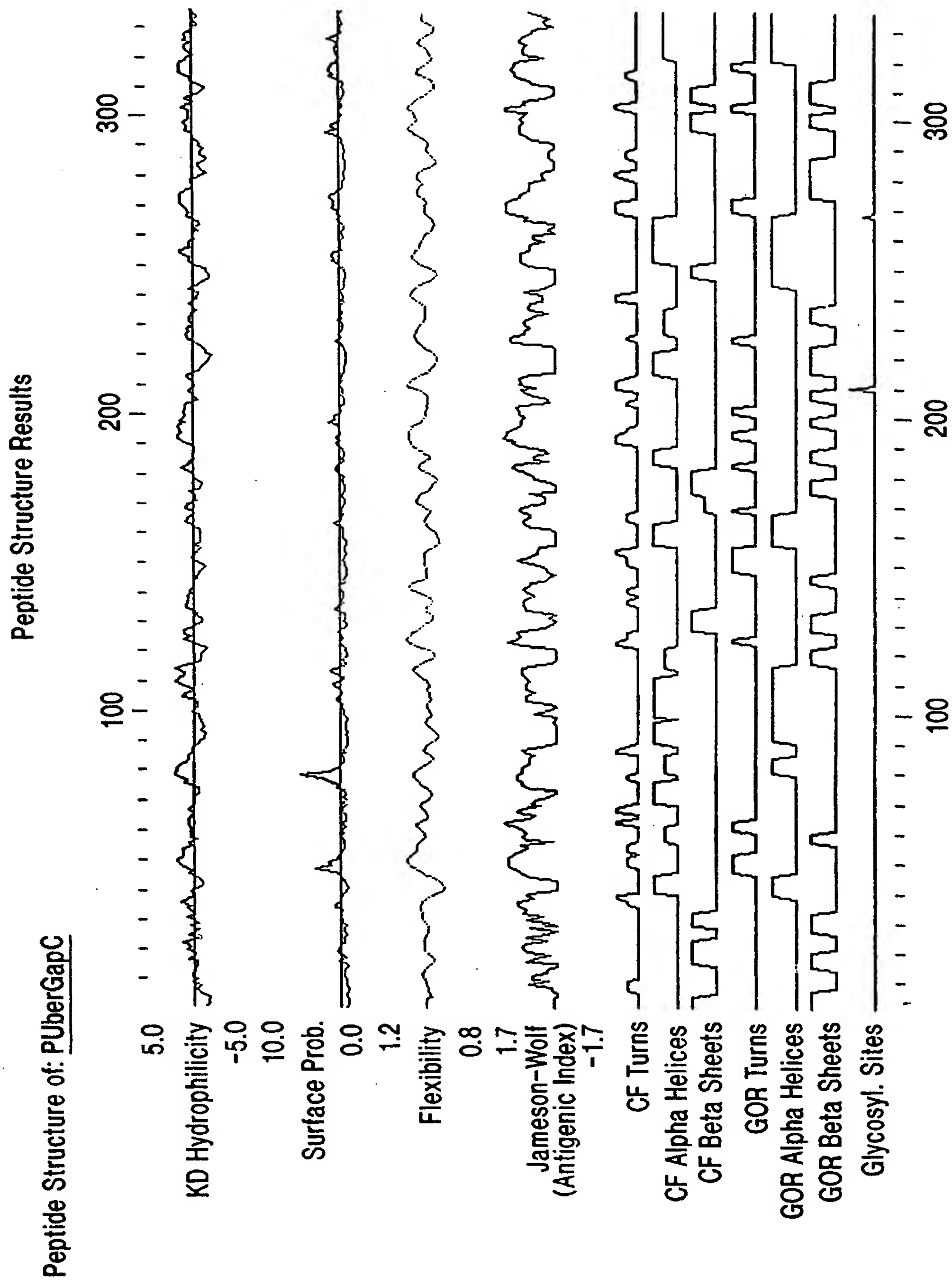


FIG. 12

Peptide Structure Results

Peptide Structure of: IniaeGapC

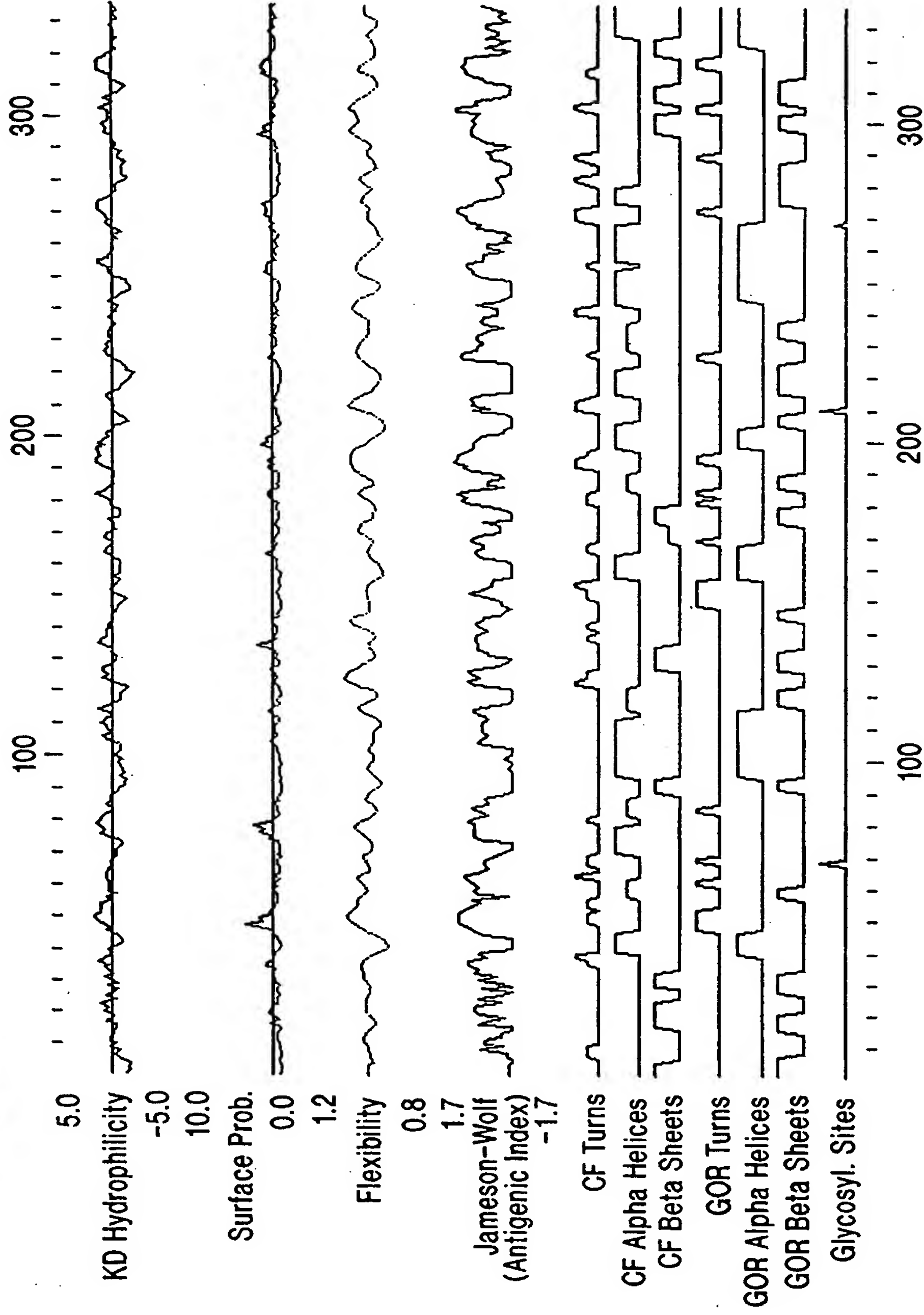


FIG. 13

Peptide Structure Results

Peptide Structure of: LipoFGAP4

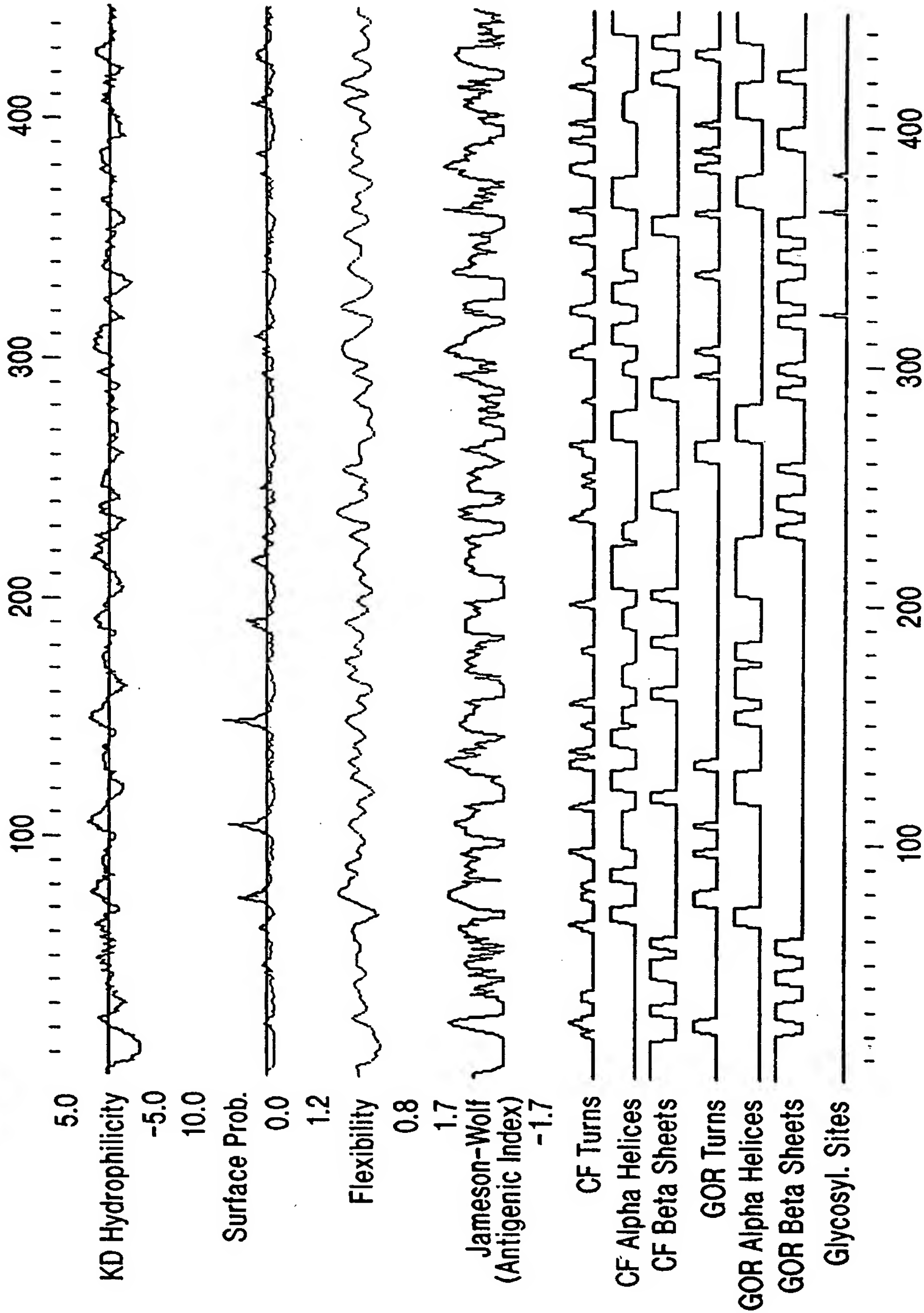


FIG. 14

Peptide Structure Results

Peptide Structure of: DysGapC

○ KD Hydrophilicity ≥ 1.3
◇ KD Hydrophobicity ≥ 1.3

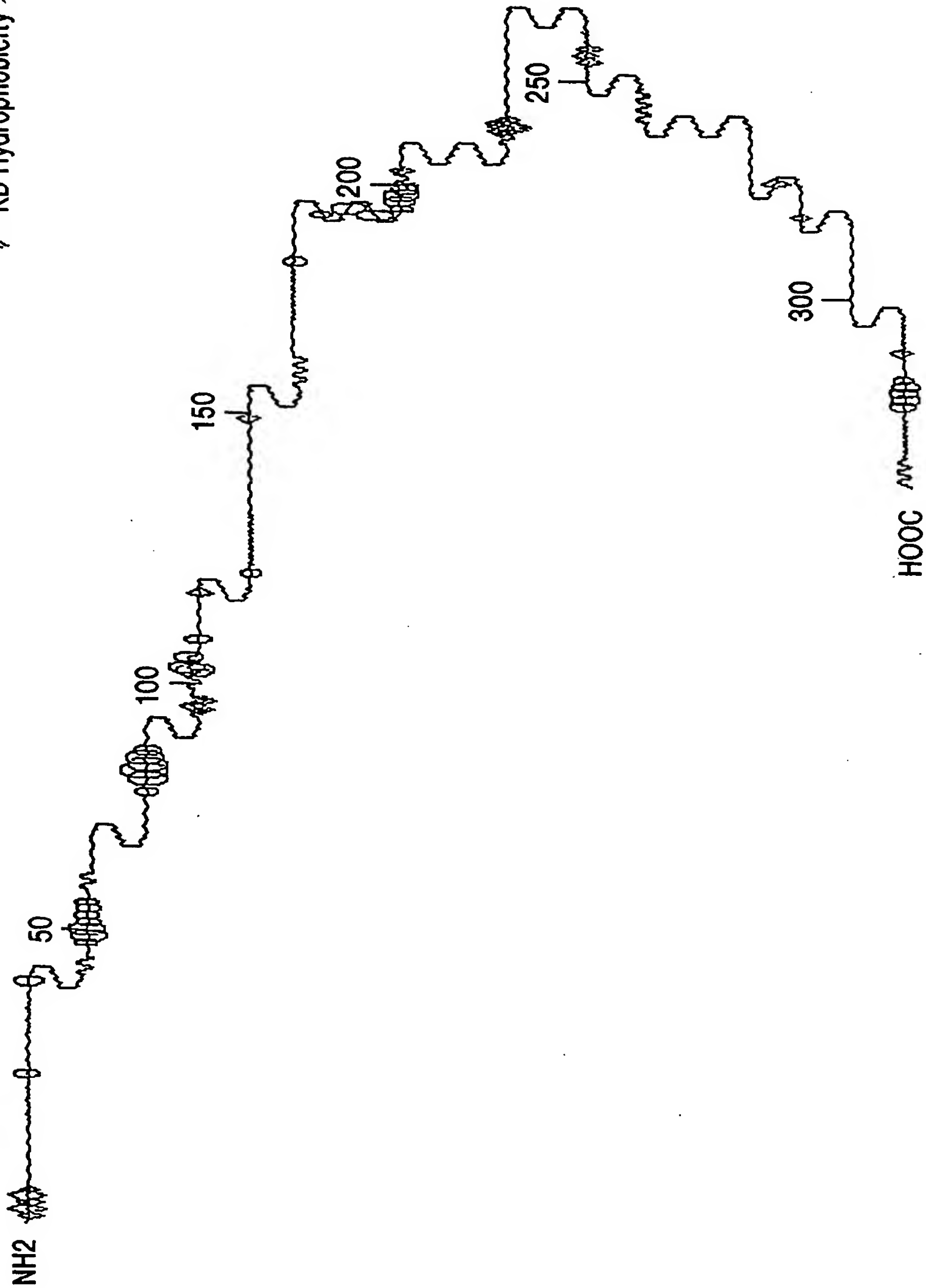


FIG. 15

Peptide Structure Results

Peptide Structure of: AgalGapC

○ KD Hydrophilicity ≥ 1.3
◇ KD Hydrophobicity ≥ 1.3

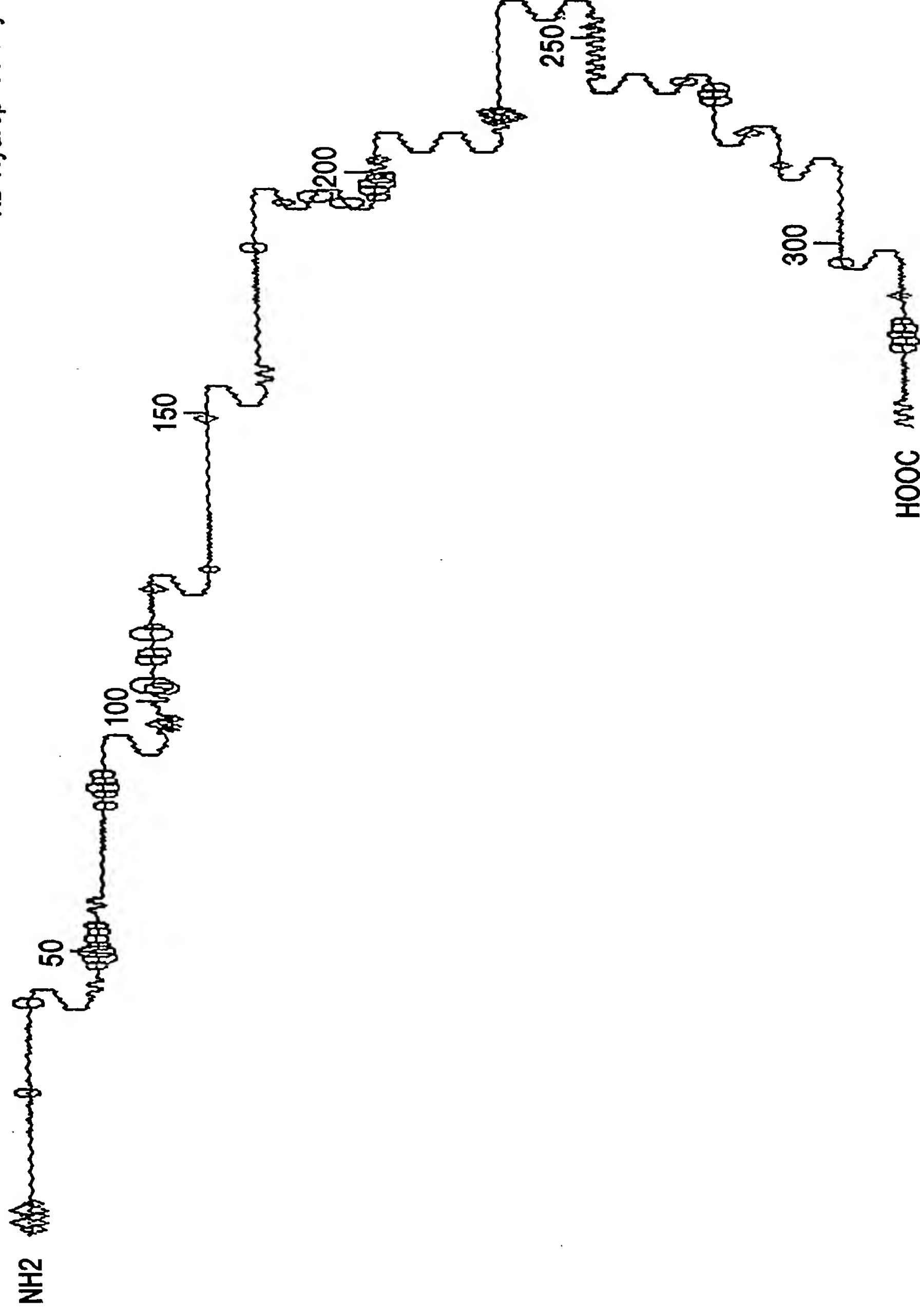


FIG. 16

Peptide Structure Results

Peptide Structure of: UberGapC

○ KD Hydrophilicity ≥ 1.3
◇ KD Hydrophobicity ≥ 1.3

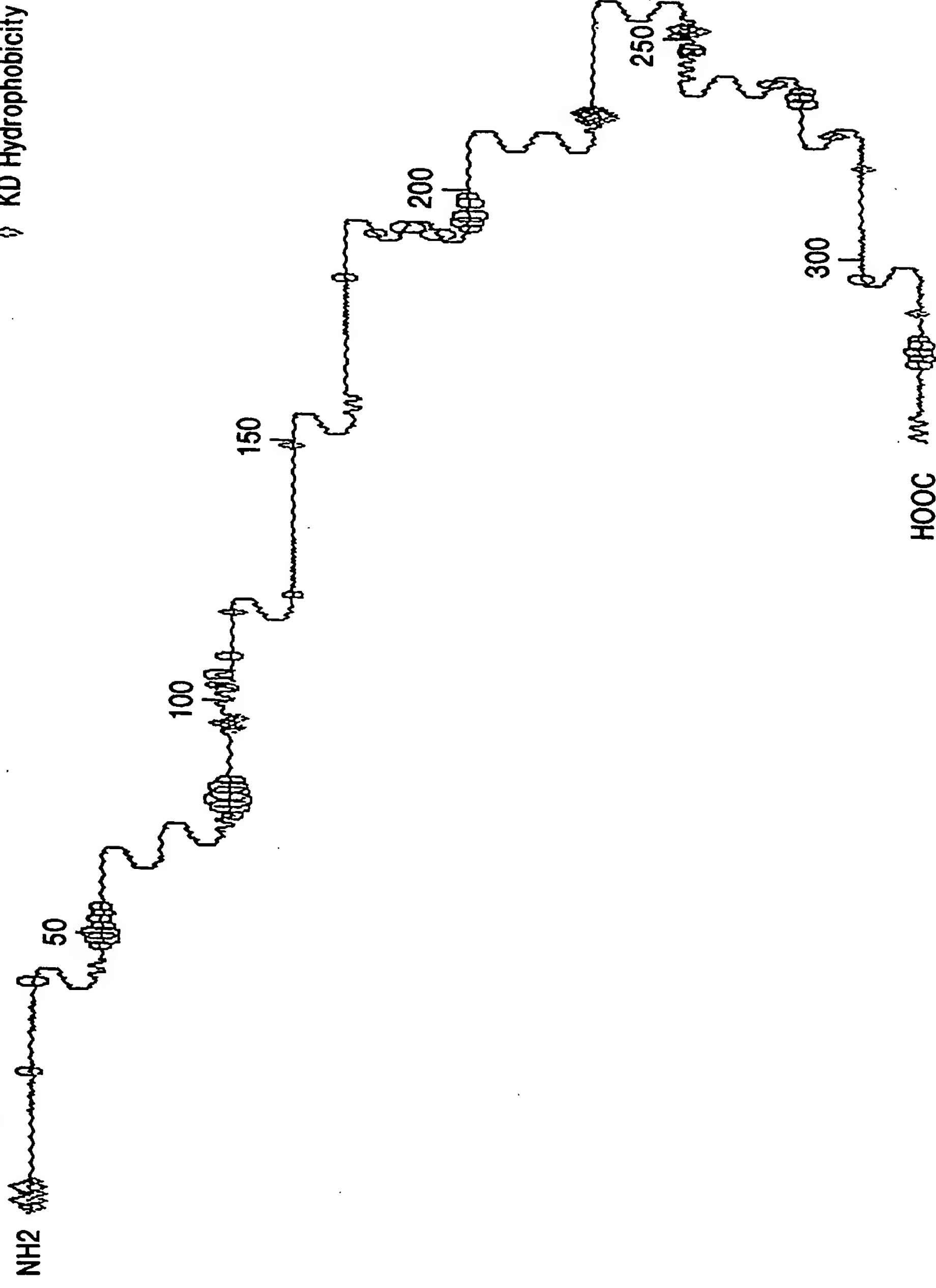


FIG. 17

Peptide Structure Results

Peptide Structure of: PUberGapC

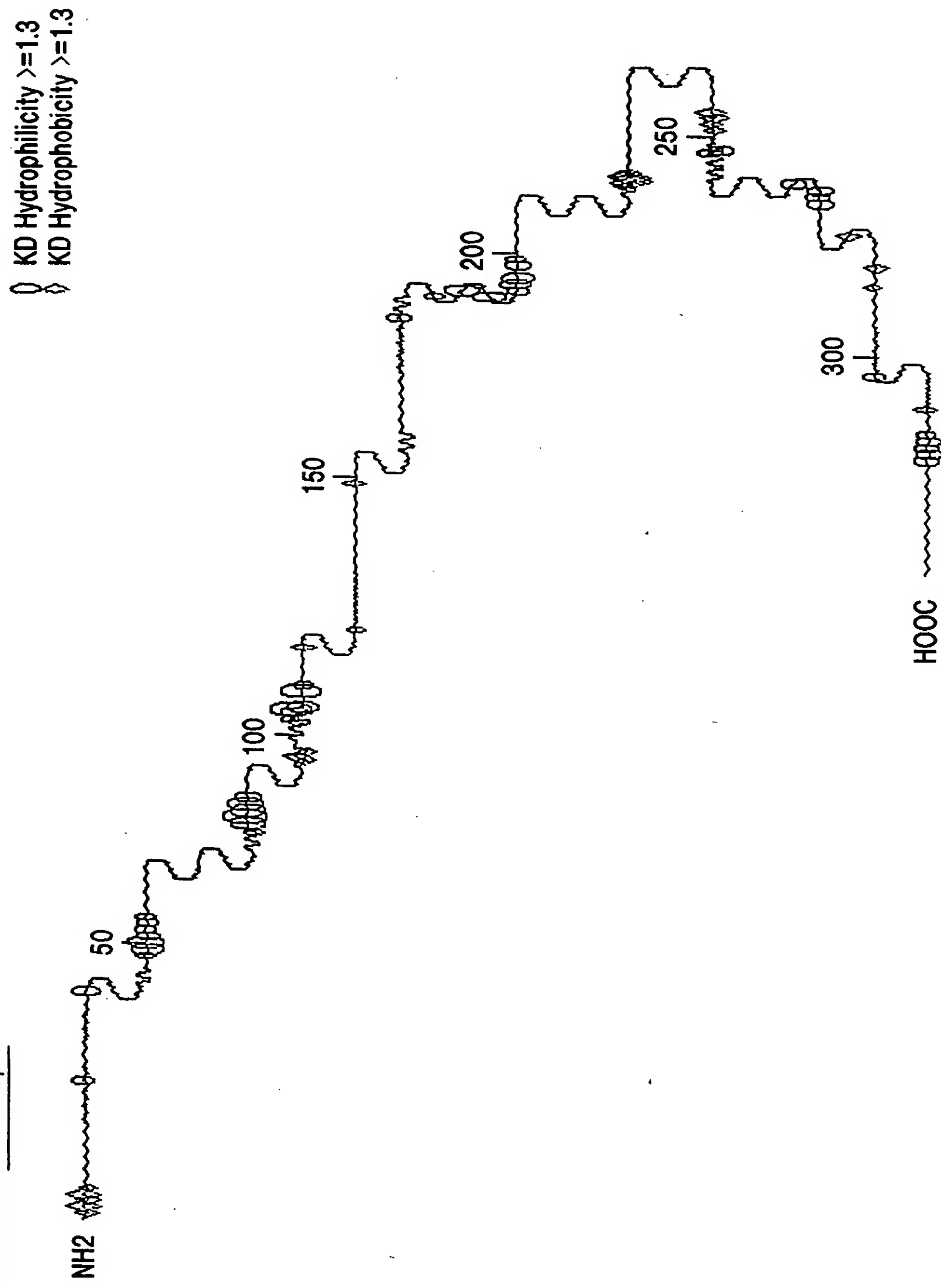


FIG. 18

Peptide Structure Results

Peptide Structure of: IniaeGapC

○ KD Hydrophilicity ≥ 1.3
◇ KD Hydrophobicity ≥ 1.3

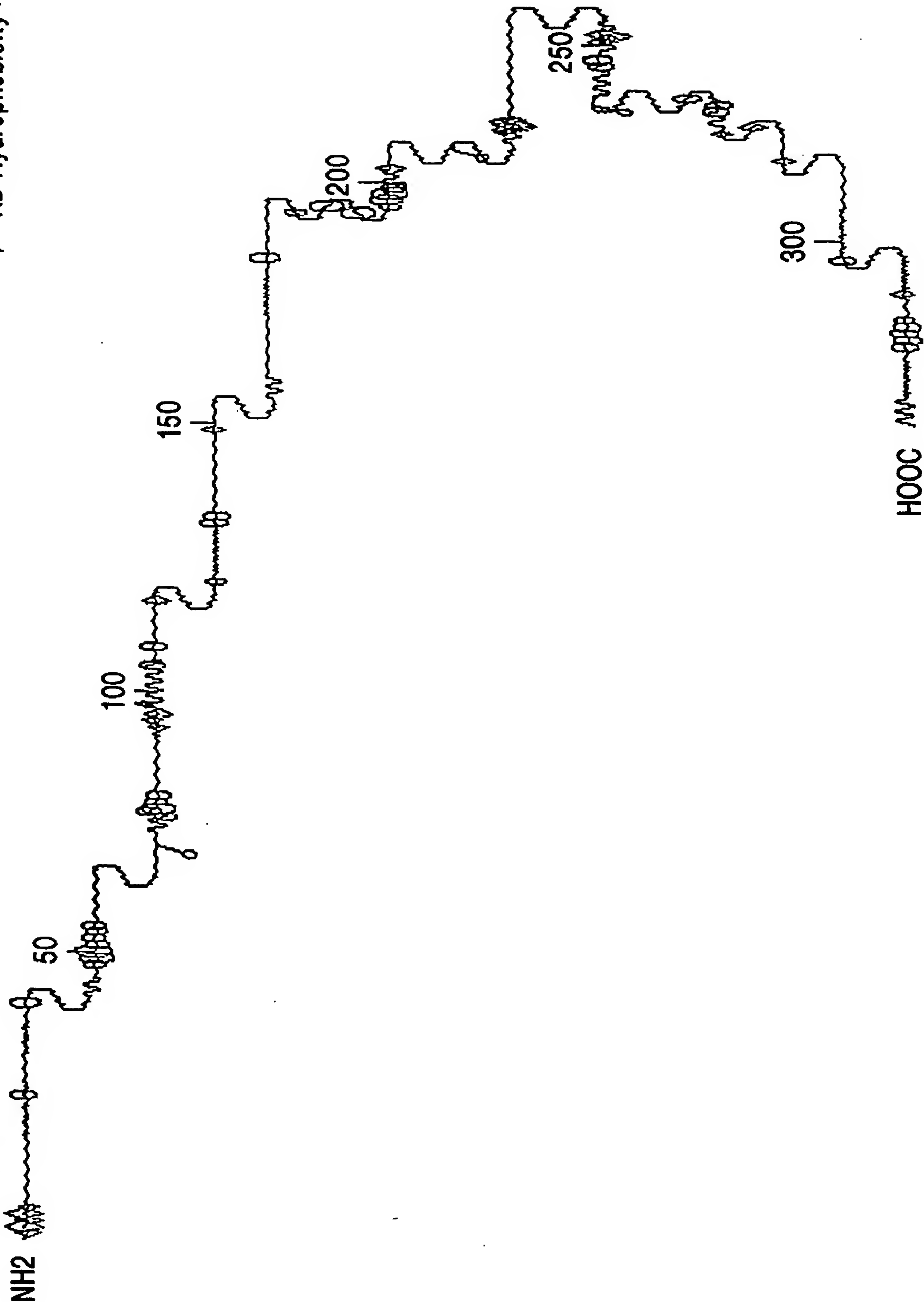


FIG. 19

Peptide Structure Results

Peptide Structure of: LipoFGAP4

○ KD Hydrophilicity ≥ 1.3
◇ KD Hydrophobicity ≥ 1.3

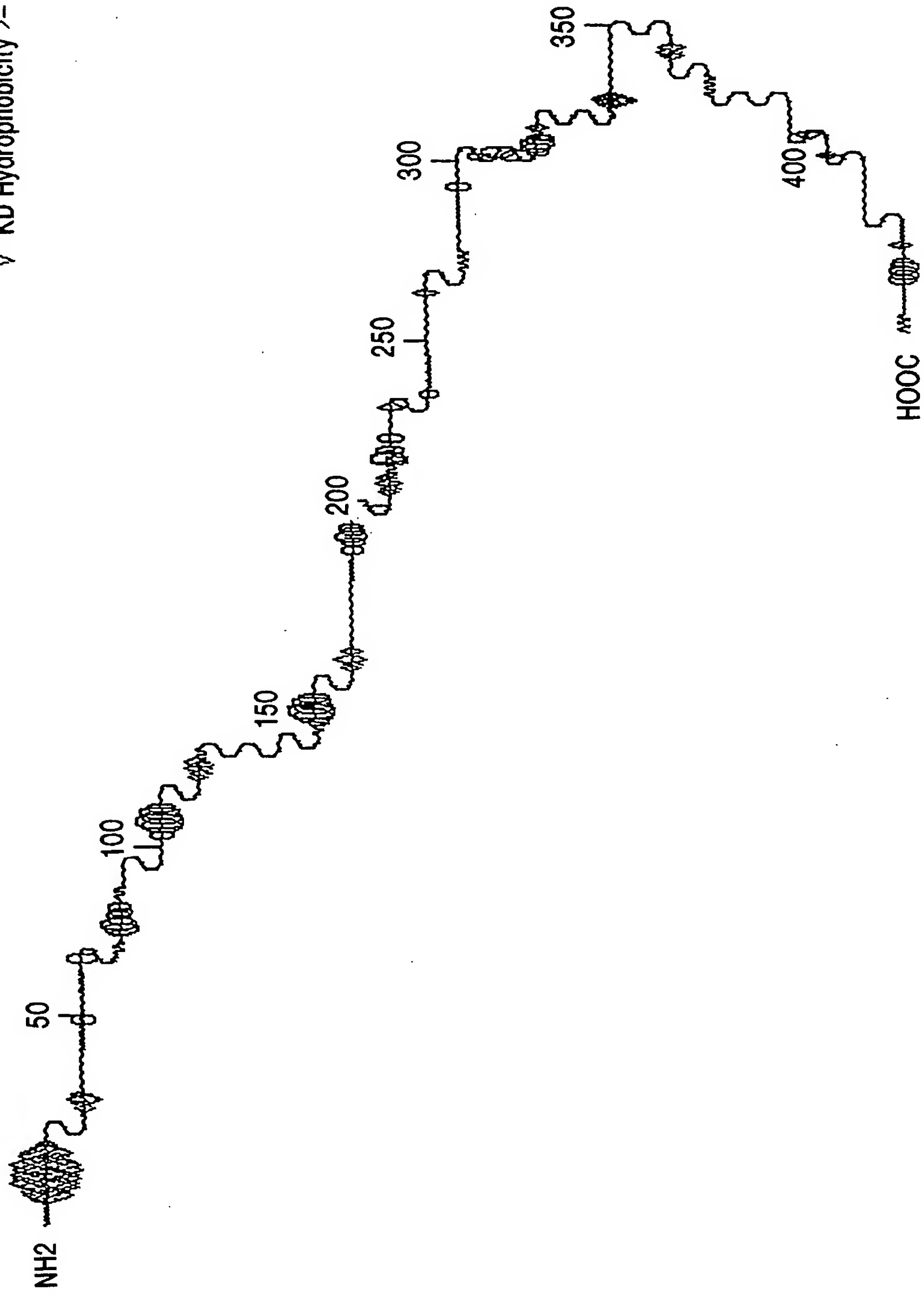


FIG. 20

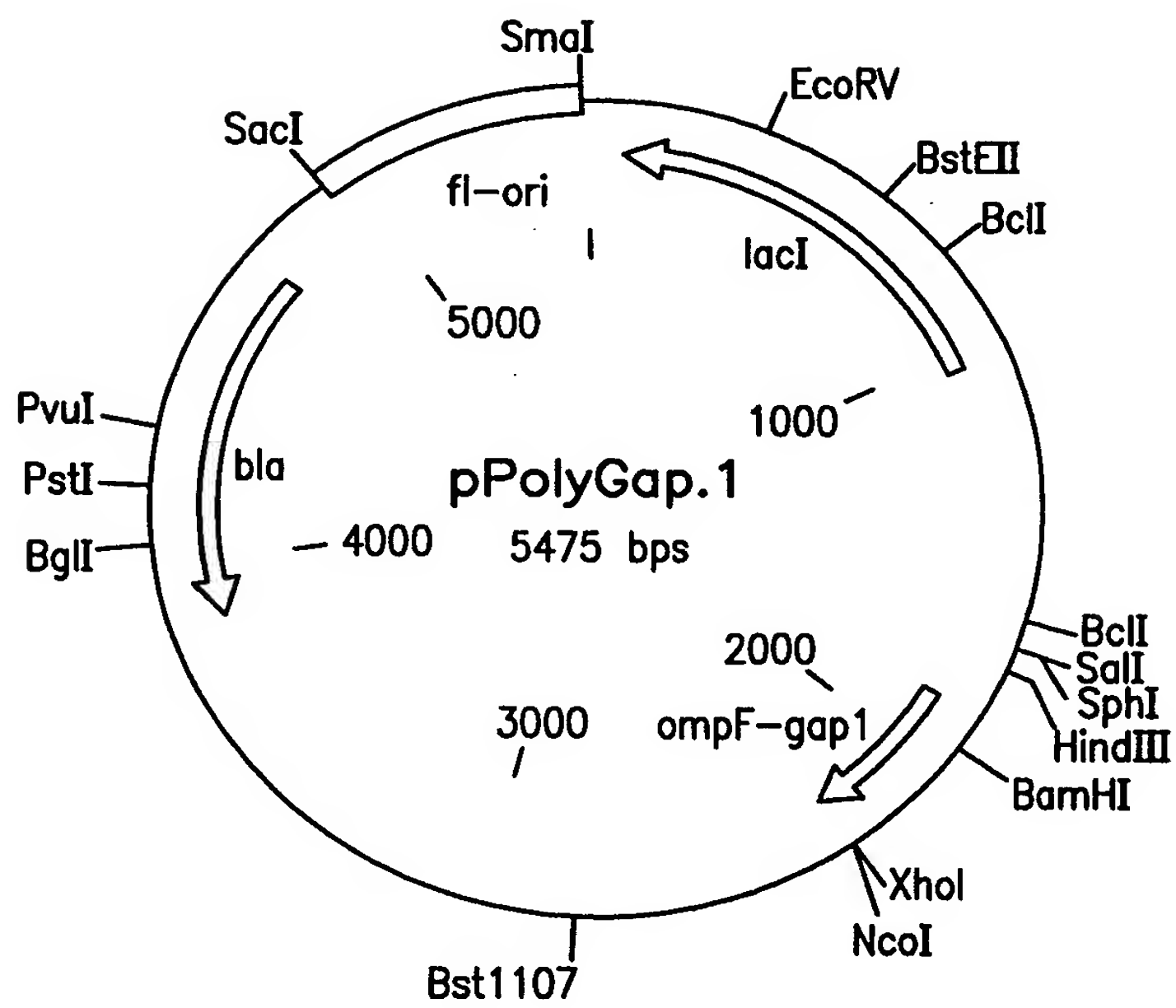


FIG. 21

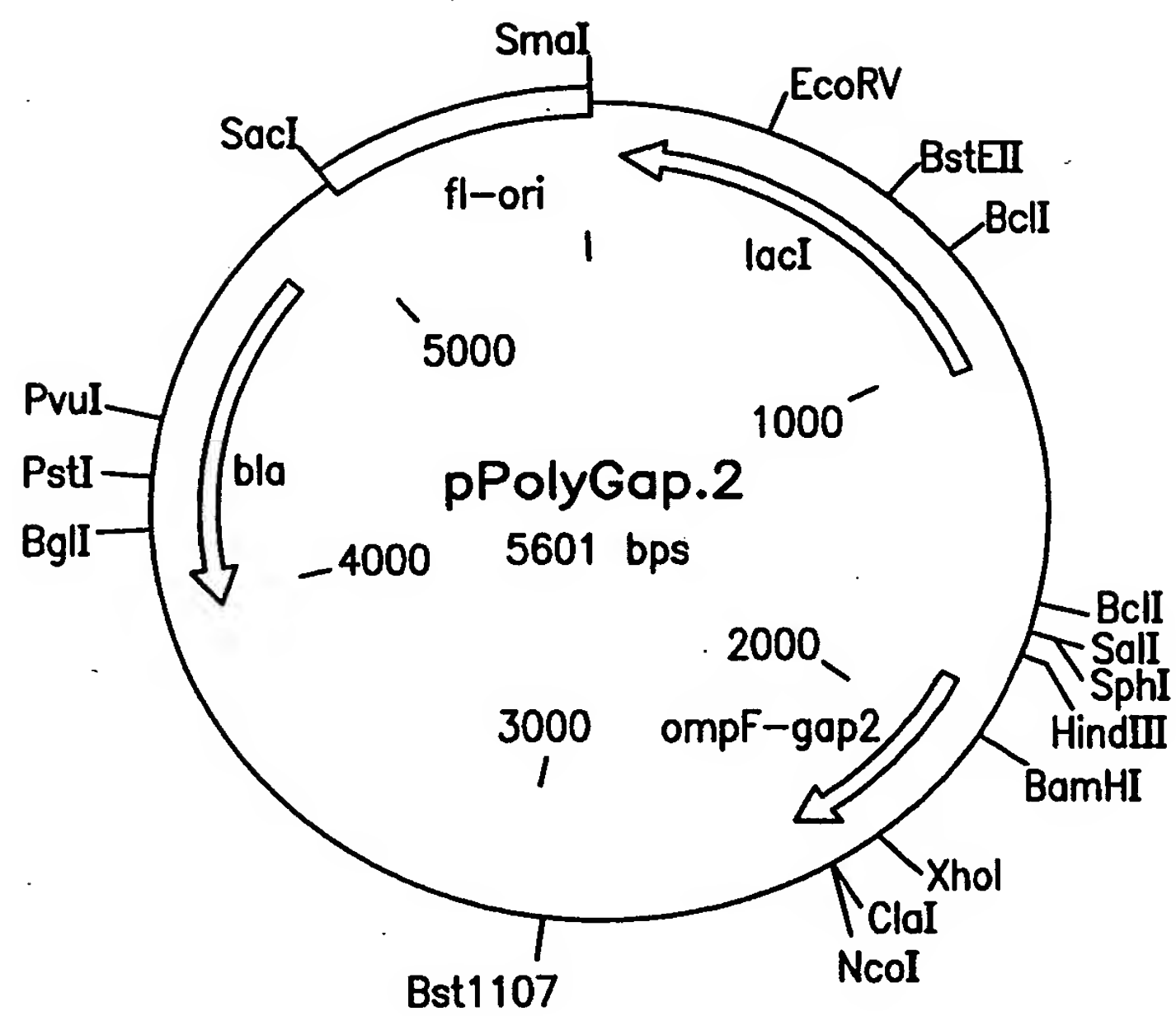


FIG. 22

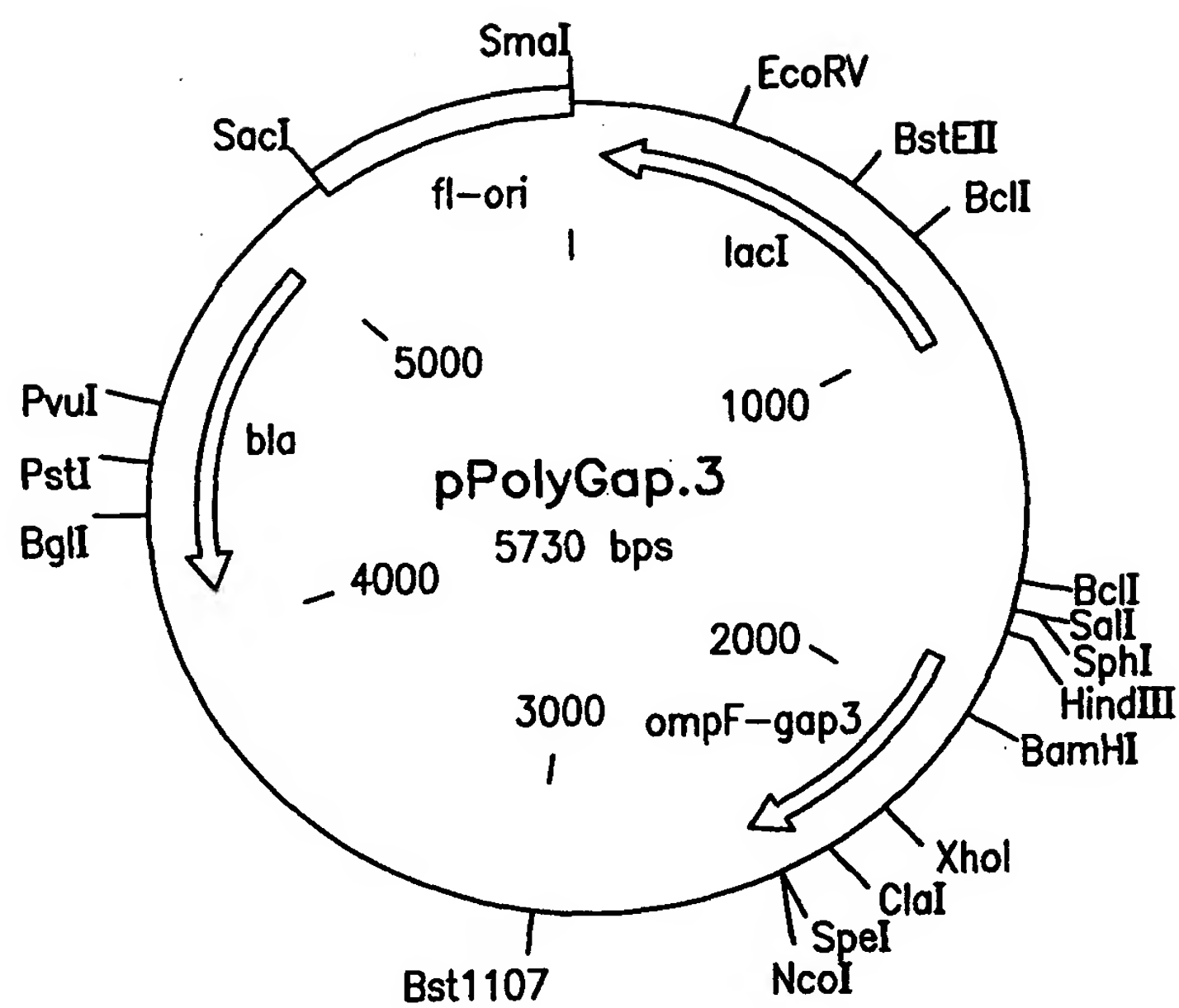


FIG. 23

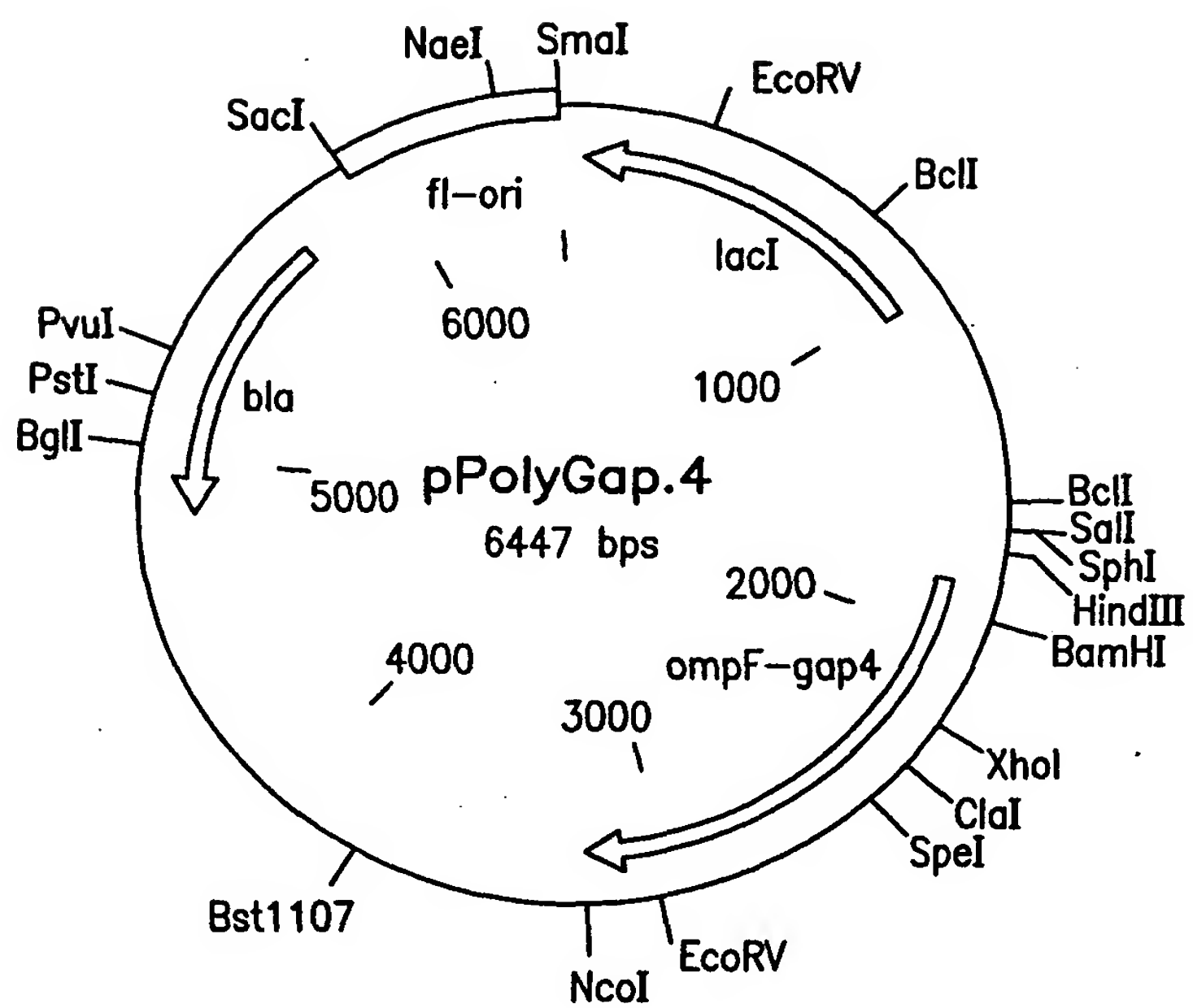


FIG. 24

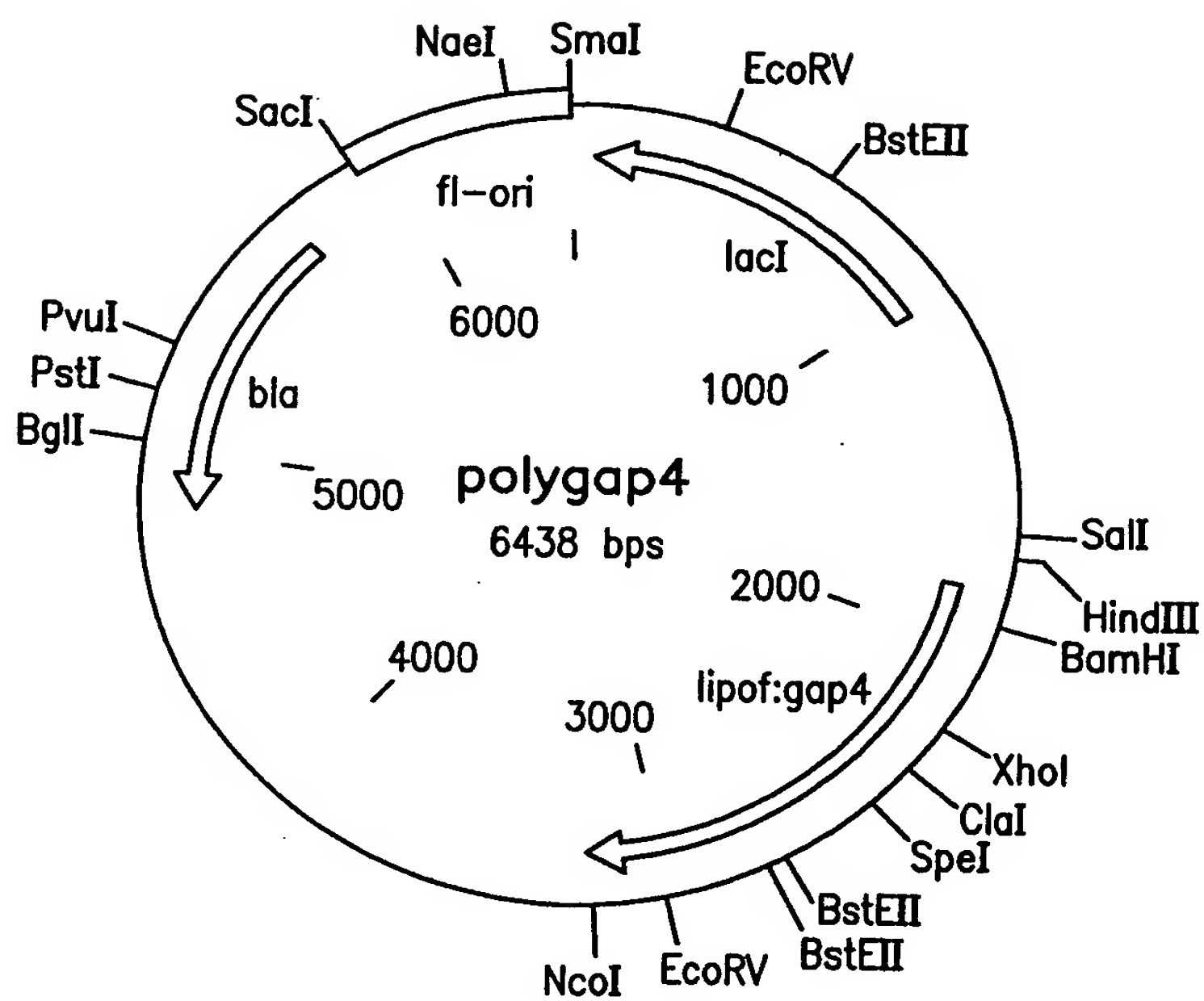


FIG. 25